

THE
NATURALIST:

A QUARTERLY JOURNAL OF
Natural History for the North of England

EDITED BY
W. A. SLEDGE, Ph.D., B.Sc.,
THE UNIVERSITY, LEEDS,

with the assistance as referees in special departments of

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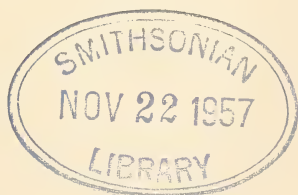
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1957.



A. BROWN & SONS, LTD., PERTH STREET WEST, HULL
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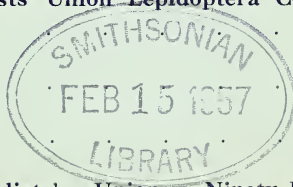
E. W. Taylor, C.B.E., F.R.S.

H. C. Versey, D.Sc., F.G.S.

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THE NATURALIST

FOR 1957

TWO SPECIES OF *NIDULARIA* FR. SECTION *SOROSIA* TUL. IN YORKSHIRE

J. T. PALMER

SUMMARY

Nidularia denudata Fr. and *N. minutissima* sp. nov. are recorded for several localities in the West Riding (V.C. 63) and the latter is formally described. Both fungi are common along the Pennines. A key is given to the British members of the section, including *N. duriaeana* Tul., which occurs on the Lancashire dunes.

INTRODUCTION

Members of the section *Sorosia* have only been sparsely recorded and, indeed, the group was unknown in Britain until a chance collection of *Nidularia denudata* Fr. was made on a rabbit pellet (JTP144) by Nigel F. Palmer at Brinnington, Cheshire, on September 26th, 1953. Both *N. denudata* and *N. minutissima* have been found to be common fungi in acid situations, especially in the Pennines, whilst *N. duriaeana* Tul. has been found on several occasions on the calcareous marine dunes of South Lancashire.

TECHNIQUE

The peridiole measurements quoted below relate to dry structures: those of the three species considered increase in size by approximately 10% when soaked in water. The peridiole sections were cut on a freezing microtome. All hymenial components were measured with an ocular micrometer in erythrosin B in 10% ammonia, with dimensions given to the nearest 0.5 μ .

DISTRIBUTION

N. denudata has been collected by the author in Cheshire, Derbyshire, Lancashire, Northumberland, Nottinghamshire, Staffordshire, Surrey and Yorkshire, whilst it was found in two localities in Belgium during the recent European Mycological Congress. *N. minutissima* has so far been found in Cheshire, Derbyshire, Lancashire, Northumberland, Staffordshire and Yorkshire. Although both species are so far only recorded for vice-county 63 in Yorkshire, this purely reflects the author's collecting activities. They are probably common, widely distributed fungi but overlooked owing to their small size.

TABLE I
YORKSHIRE RECORDS OF *N. denudata* AND *N. minutissima*

No.†	Locality	Nat. Grid	Substratum	Date
<i>Nidularia denudata</i> Fr.				
395	Marsden.	SE047118	Graminicolous debris.	21/12/54
522	Dunford Bridge.	SE154026	<i>Juncus effusus</i> debris.	2/7/55
523	Dunford.	SE155034	As above.*	2/7/55
524	Snailsden	SE145037	As above.	2/7/55
525	Crossley's Plantation, near Ramsden.	SE125052	<i>Pinus sylvestris</i> and <i>Calluna vulgaris</i> twigs.	2/7/55
536	Noonsun Hill, near Greenfield.	SD992031	<i>J. effusus</i> debris.	23/7/55
540	Carr Wood, Farnley Tyas.	SE178132	<i>Fagus sylvatica</i> branch.	30/7/55
545	Chew Mount, near Greenfield.	SE030017	Rabbit pellets and graminicolous debris.	1/8/55
556	Millbrow, Greenfield.	SE005043	<i>J. effusus</i> debris.	3/9/55
557	Tunstead, Greenfield.	SE006045	As above.	3/9/55
609	Primrose Hill, Broughton.	SD935503	As above.	24/3/56
634	Longshaw Lodge.*	SK266798	<i>F. sylvatica</i> twigs.	8/9/56
635	Sheffield Plantation, Longshaw.*	SK268791	<i>Acer pseudoplatanus</i> twigs, etc.	8/9/56

Nidularia minutissima sp. nov.

544	Chew Brook, near Greenfield.	SE025025	<i>J. effusus</i> sheaths and leaf debris.	1/8/55
546	Chew Reservoir, near Greenfield.	SE042018	<i>J. effusus</i> leaf sheath.	1/8/55
558/ 560	Tunstead, Greenfield .	SE007046/7	<i>J. effusus</i> leaf sheaths, leaf debris and root- stock.	3/9/55
632	Fox House Inn, Longshaw	*SK268802	<i>J. effusus</i> leaf debris.	8/9/56
633	Longshaw Pastures.*	SK266795	<i>J. effusus</i> leaf sheaths.	8/9/56
636	Limb Valley.*	SK293835	<i>J. effusus</i> leaf debris.	9/9/56

† Herb. J. T. Palmer.

* British Mycological Society's Autumn Foray, 1956.

TAXONOMY

Several species of *Nidularia* have been recorded for Britain but the group requires critical study and the author is tentatively placing all except the Section *Sorosia* under *N. farcta* (Roth ex Pers.) Fr. *N. farcta* differs markedly from the Section *Sorosia* by its thick felted peridial layer and peridiole construction. The Section *Sorosia* is characterised by the white peridium formed of a thin web of hyaline hyphae and, in the three British species, a double-walled peridiole.

The peridiole wall is of paramount importance. *N. denudata*, which has yellow to tan coloured peridioles, has the exocortex formed of loosely woven hyphae whilst the endocortex is a more compacted structure. *N. duriaeana* has dark reddish-brown peridioles and, with this species, it is the exocortex which is the closely interwoven layer whilst the endocortex is little more than a layer of single hyphae. *N. minutissima*, however, is characterised by having consistently uniperidial peridia and truncate metamorphosed basidia: the peridiole structure appears to be similar to *N. duriaeana*. Both *N. denudata* and *N. duriaeana* have citriform to globose metamorphosed basidia with granular contents. Metamorphosed basidia are basidia which do not produce basidiospores but round off and can be found lying loose amongst the hymenial contents looking like abnormally large spores. They were first observed by Olive (Some taxonomic notes on the Higher Fungi, *Mycologia*, **38**, 534-47, 1946) in *N. duriaeana*, who used the synonym *N. castanea* (E. & E. ex White) Sacc.

The three species are being studied by the author and a full account of his findings, as well as the various type and other material, is being published elsewhere.

The conception of *Nidularia* Fr. requires emending to include the uniperidial *N. minutissima*, which is closely related to both *N. denudata* and *N. duriaeana*. However, peridia containing but a single peridiole are occasionally found in both *N. denudata* and *N. duriaeana*, although they are easily overlooked. As Brodie (Morphology and culture characteristics of a highly aberrant *Cyathus*. *Amer. J. Bot.*, **42**, 168-76, 1955) has found similar structures in cultures of *Cyathus montagnei* Tul. and *C. poeppigii* Tul., it seems that the peridiole number can be variable and is, therefore, of doubtful taxonomic importance for the Nidulariaceae.

Key to the Three British Species and *N. farcta*

- PERIDIUM cup-shaped, with apex closed by a membranous epiphragm
 Peridioles lying loose within fructification (Not recorded for Britain). *Nidula*
 Peridioles attached to interior of peridium by funiculi
 Peridium composed of a single layer *Crucibulum*
 Peridium formed of three layers *Cyathus*
 PERIDIUM at first a rounded structure without an epiphragm *Nidularia*
 1a. Peridium usually coloured, formed of tinted, rigid, simple and
 branched, spinose hyphae with a single-walled peridiole c. 1 mm.
 diam. *N. farcta*
 1b. Peridium usually white, formed of hyaline, flaccid, ramose hyphae
 and (with British species) a double-walled peridiole (producing
 a characteristic labyrinthiform pattern in a 'squash' under a
 cover slip) *Nidularia* Section *Sorosia*

DISTRIBUTION MAP ($\frac{1}{8}$ " to one statute mile)

WEST RIDING, YORKS. (V.C. 63). Collections 556/7, 634/5 and 558/60 are each indicated by a single symbol owing to their closeness.

CHESHIRE: JTP144. First British collection of *N. denudata* Fr.

DERBYSHIRE: JTP493. First British collection of *N. minutissima* sp. nov.

LANCASHIRE: JTP499. Type locality of *N. minutissima* sp. nov.

NIDULARIA MINUTISSIMA SP. NOV. (TYPE SPECIMEN, JTP499)

Fig. 1. All stages of peridia and peridioles on a *Juncus effusus* leaf-sheath, $\times 10$.

Fig. 2. Section of peridiole showing structure of cortex, $\times 100$.

Fig. 3. Section of peridiole cortex showing exo-, meso- and endocortex, and remnants of peridium, $\times 500$.

Fig. 4. Metamorphosed basidia, $\times 1,000$.

Fig. 5. Basidiospores, $\times 1,000$.

- 2a. Peridioles *c.* 280 μ diam. or more, with peridia generally multi-peridiolar; metamorphosed basidia citriform to globose . . . 3
- 2b. Peridioles *c.* 210 μ diam., rarely reaching 300 μ diam., with consistently uniperidiolar peridia; basidiospores *c.* 6 \times 4 μ *N. minutissima*
- 3a. Peridioles yellow to tan, with endocortex being the most closely compacted layer, *c.* 330 μ upwards; basidiospores *c.* 7.5 \times 5.5 μ *N. denudata*
- 3b. Peridioles dark reddish-brown, with exocortex being the most closely compacted layer, *c.* 280 μ ; basidiospores *c.* 7 \times 5.5 μ . . . *N. duriaeana*

Nidularia minutissima sp. nov.

Sporocarpa gregaria ad solitaria, alba, uniperidiolaria. *Peridium* tenuissimum, evanescens, hyphis hyalinis, ramosis. *Peridiola* libra, lenticularia, bicorticata, lateritia vel lutea, biconcava ubi sicca, circa 210 μ diam. *Basidia* clavata, bi- ad tetraspora, vel mutata. *Basidiosporae* hyaline, ellipticae, circa 6.0 \times 4.0 μ . *Basidia mutata* hyalina, spatulata ad globosa vel irregularia, saepe guttula magna, circa 11.5 \times 8.5 μ .

Habitat: In culmorum vaginis *Junci effusi* et in ligno putrido et decorticato *Pini sylvestri*.

Locus typicus: Kearsley, Lancs., Anglia.

Typus (No. JTP499) in herbario privato auctoris depositus est et pars typi in herbariis Kew, Leiden, Paris et Uppsala.

The first collection of *N. minutissima* (JTP493) consisted of a few scattered peridioles on partly submerged stems of *J. effusus* in a pond at Coombes, near Charlesworth, Derbyshire, on June 5th, 1955. It was regarded as only an aberrant form of *N. denudata* until abundant material in all stages of development at Kearsley, Lancs., showed it to be distinct.

ACKNOWLEDGEMENTS

The writer is indebted to Mr. S. S. Bates for his assistance with the Cheshire collections, to Dr. R. W. G. Dennis for his continued interest and guidance, to Mr. D. M. Henderson for freezing microtome sections of peridioles and to Mr. H. G. Ward for correcting his Latin.

FIELD NOTE

Some Alien Plants of the Bury, Lancashire, Area.—The commonest alien plants of the Bury area are *Claytonia alsinoides* Sims, Rayless Chamomile (*Matricaria matricarioides* (Less.) Porter), and the Japanese Knotweed (*Polygonum cuspidatum* Sieb. & Zucc.), all of which are widespread in the district. The Himalayan Balsam (*Impatiens glandulifera* Royle) is abundant along the banks of the rivers Roch and Irwell and is found by some lesser streams also, and a healthy colony of the Small Balsam (*I. parviflora* DC.) occurs in a small ravine in Ashworth Valley, which constitutes one of the plant's few south Lancashire stations.

In *The Manchester Flora* (1859), L. H. Grindon states that the Autumn Crocus (*Crocus nudiflorus* Sm.) was found 'about Prestwich, above the Dells' and I have been informed that the plant still grew at Prestwich comparatively recently but have not seen it there myself. I have, however, seen it in a field at Woolfold where it was shown to me by Mrs. V. Foy.

Monkey-flower, *Mimulus guttatus* DC., occurs in a 'feeder' bringing water from the River Irwell to a works at Burrs, and also in a stream at Springside, a short distance away. The Orange Hawkweed, *Hieracium brunneocroceum* Pugsl., is well established on an old wall at Hawkshaw, and the Slender Rush, *Juncus tenuis* Willd., stated in Clapham, Tutin and Warburg to be 'still extending its range in Britain', is found in considerable numbers in the Longcroft area of Walmersley.

Although the Blue-eyed grass (*Sisyrinchium angustifolium* Mill. sec Fernald) is listed in the floras as a native, it is, perhaps, permissible to include it in these notes as it is said to be native only to Ireland. The plant's local station is a disused works 'chemical' tip where it occurs in quantity. This tip was first brought to my notice by the Rev. C. E. Shaw, and provides a habitat for a number of plants otherwise absent from the area.—F. SLATER.

VERTEBRATE SECTION MEETINGS IN 1956

ON March 10th, 1956, over 100 Union members and associates attended the Spring Meeting of the Vertebrate Section in St. John's Parish Room, Leeds. Meetings of the Bird Protection Acts Sub-committee and the Ornithological Committee took place before the main business of the full meeting was taken. The President of the Section for 1956, Mrs. E. Hazelwood, asked for information regarding the current state of myxomatosis and received many reports of interest. Mr. Ralph Chislett requested members to protest to their Members of Parliament against the Order removing protection from the eggs of thirteen common birds. A brief outline of the previous year at Spurn Bird Observatory was given by the Secretary, Mr. George Ainsworth, and the Ornithological Report for 1955 was presented by Mr. Chislett. The proposed Nature Reserve at Fairburn Ings was described by Mr. R. F. Dickens, who gave details of the area involved and of the negotiations which had taken place. Mr. Alan Walker discussed his experiences on the Solway, and his talk was illustrated by plates provided by the Wildfowl Trust. The meeting concluded with the showing of members' slides, mainly of birds caught and ringed at Spurn Observatory.

More than 70 members were present at St. John's on October 20th for the Autumn Meeting when Mr. Henry O. Bunce of Hull was elected Chairman of the Section for 1957. A short report of the Mammals division was given by Mrs. Hazelwood and this was followed by the interim report from Spurn Observatory by Mr. Ainsworth, and a similar report of the Ornithology division by Mr. Chislett. Some suggestions for work on Mammals were discussed by Mrs. Hazelwood who then introduced an illustrated talk by Mr. Chislett on the 'Three British breeding Harriers.' This was followed by a talk by Mr. John Armitage, also illustrated by slides, on 'Bats.' At this meeting paintings by John C. H. Leeson were displayed.

A. H. B. LEE,

Hon. Sec. Vertebrate Section

JOINT MEETING OF THE YORKSHIRE NATURALISTS' UNION ORNITHOLOGICAL DIVISION AND THE BRITISH TRUST FOR ORNITHOLOGY

November 10th, 1956

ABOUT 120 members of the Ornithological Division, affiliated societies and the British Trust for Ornithology, met in the General Lecture Theatre, Leeds University, on Saturday afternoon, November 10th, 1956, to hear a lecture by Dr. Stuart Smith on 'Studying Birds in the Field.' Ralph Chislett introduced the speaker, who ranged over a wide field of activities which amateur ornithologists could usefully undertake and indicated some of the findings of recent research work. Of the slides used to illustrate his lecture, those of aggressive and nuptial display in birds were particularly striking.

Dr. Bruce Campbell, Secretary of the B.T.O., outlined some of the enquiries organised by the Trust in which Yorkshire members could co-operate. Trust literature was on sale during the tea interval.

At the evening session, over which E. W. Taylor, C.B.E., F.R.S., of York, presided, John Kirby of Middlesbrough played recordings of bird songs and calls which he had made, mostly in Wensleydale. The recorded voices of Lapwings, Snipe, Golden Plover and Curlew on the moors, conjured up a very different picture from Leeds on a November evening. 'Grunts' of roding Woodcock, the drumming of two species of Woodpecker and the croaking of a Raven were among the many other sounds recorded and amusingly commented on.

The moorland scene was again conjured up by Arthur Gilpin's lecture on 'Some Birds of the Moorlands'—a very appropriate sequel to the recordings. His excellent slides showed many of the species whose voices had just been heard. In addition there were, among others, Red-throated Divers and Twite on Scottish islands. His pictures of Short-eared Owls and Merlins nesting among the heather, drew particular praise from the large and appreciative audience.

Votes of thanks to speakers, lanternists and to the University authorities for the facilities they had made available, were proposed by A. H. B. Lee, and J. C. S. Ellis.

YORKSHIRE NATURALISTS' UNION LEPIDOPTERA COMMITTEE

By kind permission of Mr. E. W. Aubrook, Director of the Tolson Memorial Museum, Huddersfield, a meeting was held on November 24th, 1956. Twenty were present when our Committee Chairman, Mr. M. D. Barham, took the Chair. Firstly he thanked Mr. Aubrook, then welcomed members, associates and visitors. He also referred to a Lepidopterists' Bulletin, of which Mr. F. Hewson had circulated three issues during the year. The latter pointed out that he had already written that anything of lasting or scientific value would be offered to *The Naturalist* or one of the entomological magazines, but notwithstanding the elementary nature of the bulletins they had been well received. If any member had suitable notes for inclusion he would be pleased to receive them.

The Chairman reminded the meeting of the Y.N.U. field meetings and hoped that more would make an effort to attend. A number of those present had brought exhibits which were explained and passed around. The meeting then broke up to examine the Porritt Collection and other exhibits, the latter including a chart showing captures with a mercury vapour light-trap at Little Horton, Bradford, by Mr. J. Briggs. This showed that 12,133 moths of 117 species had been taken between April 24th and October 19th, 1956. F.H.

Mr. E. G. BAYFORD

At the Annual Meeting of the Yorkshire Naturalists' Union in Barnsley on December 8th, Mr. E. G. Bayford, who is now in his 93rd year, was made an Honorary Member of the Union. Mr. Bayford's long association with the Union which he joined in 1889, his numerous contributions to our knowledge of the entomology of the county and his unrivalled knowledge of the history of the Union and its Journal, have given him a special place in the esteem of his fellow naturalists throughout the county. He was President of the Y.N.U. in 1936 and his interest in the entomological section of the Union is almost lifelong.

In responding to the conferment of Honorary Membership, Mr. Bayford recalled, amongst other things, his first attendance at a Y.N.U. annual meeting as a delegate from his own Barnsley Society in the year 1884 when John Gilbert Baker gave the Presidential Address. Five years later he became a full member and has retained an active interest in natural history in general and entomology in particular ever since and been a frequent contributor to *The Naturalist*.

In opening the afternoon proceedings, the Mayor, Alderman Mrs. M. Brannan, J.P., paid a tribute to Mr. Bayford as one of Barnsley's most notable and highly respected citizens, and warmly expressed the sincere regard in which he is held in the town and district. His election was certainly one of the most pleasing and memorable incidents of this meeting and gave pleasure to everyone present.

Bryological Excursion to Hackfall (September 22nd, 1956).—It is regretted that some of the rarer mosses recorded from Hackfall, e.g. *Campylostellium saxicola* and *Cynodontium bruntoni* (of which this is the type-locality, first gathered here in 1801 by Wm. Brunton) were not seen. The large boulders in the river bed were green with mosses, the larger part of which was *Dichodontium pellucidum*. Other bryophytes listed include: *Atrichum undulatum* (Hedw.) P. Beauv., *Fissidens rufulus* B. & S., *F. taxifolius* Hedw., *F. adianthoides* Hedw., *Dichodontium pellucidum* (Hedw.) Schp., *Dicranum scoparium* Hedw. fruiting, *Cinclidotus fontinaloides* (Hedw.) P. Beauv. fruiting, *Barbula fallax* Hedw. fruiting, *B. recurvirostris* (Hedw.) Dix. fruiting, *Tortella tortuosa* (Hedw.) Limpr., *Rhacomitrium aciculare* Brid. fruiting, *Tetraphis pellucida* Hedw., *Orthodontium lineare* Schwaegr. fruiting, *Bryum pallens* (Brid.) Rohl fruiting, *Mnium hornum* Hedw., *M. undulatum* Hedw., *Climacium dendroides* Web. & Mohr, *Homalia trichomanoides* (Hedw.) B. & S. fruiting, *Hookeria lucens* (Hedw.) Sm., *Leskea polycarpa* Hedw., *Thuidium tamariscinum* (Hedw.) B. & S., *Cratoneuron commutatum* (Hedw.) Roth, *Amblystegiella sprucei* (Bruch) Loeske, *Hygrohypnum luridum* (Hedw.) Jennings, *Isoetecium myurum* (Brid.) fruiting, *Brachythecium rutabulum* (Hedw.) B. & S., *B. plumosum* (Hedw.) B. & S., *Eurhynchium striatum* (Hedw.) Schp., *E. praelongum* (Hedw.) Hobk., *E. murale* (Hedw.) Milde fruiting, *Isopterygium elegans* (Hook.) Lindb., *Plagiothecium denticulatum* (Hedw.) B. & S., *P. undulatum* (Hedw.) B. & S., *Ctenidium molluscum* (Hedw.) Mitt., *Pellia fjabbroniana* Raddi.—G. A. SHAW.

THE YORKSHIRE NATURALISTS' UNION: NINETY-FIFTH ANNUAL REPORT

The Ninety-fourth Annual Meeting was held in the Tolson Memorial Museum, Huddersfield, on December 3rd, 1955, by invitation of the Arts Committee of Huddersfield Corporation and the Huddersfield Naturalist, Photographic and Antiquarian Society.

The Presidential Address was delivered by Mr. E. Wilfred Taylor, C.B.E., F.R.S., M.B.O.U., F.R.M.S., on 'Some Additions to our Knowledge of Yorkshire Mammals, 1881-1955'. It is printed in *The Naturalist*, 1956, pp. 37-44.

The Presidency for 1957 has been offered to and accepted by P. F. Holmes, M.A., Warden of Malham Tarn Field Centre.

The Excursions for 1957 will be to:

- V.C. 61. Fimber or Bishop Wilton, July 6th.
- V.C. 62. Goathland, weekend July 12th-14th.
- V.C. 63. Gunthwaite Hall, June 22nd.
- V.C. 64. Pateley Bridge, May 25th.
- V.C. 65. Leyburn (Whitsun), June 7th-10th.

The Membership List.

At the time of writing membership of the Union comprises 3 Honorary Members, 14 Life Members, 330 Ordinary Members, 38 Societies, and 23 Family Members.

New Members.

- Armitage, B., 11 Highroyd Terrace, Moldgreen, Huddersfield.
- Ballard, L. C., Park Lane, Womersley, near Doncaster.
- Bean, C., Crossmere Hill, Aldbrough, near Hull.
- Bolton, Mrs. Winifred A., 53 Windmill Lane, Yeadon, near Leeds.
- Bond, Rev. F. W., 325 Lidgett Lane, Leeds 17.
- Bond, Mrs. F. W. (Family Member).
- Branson, F. E., 10 St. Mary's Avenue, Harrogate.
- Burnett, Dr. G., 11 The Mount, Pontefract.
- Castleford and District Naturalists' Society, Secretary: Miss R. A. Whiteside, 4 Ferrybridge Road, Castleford.
- Cooper, Dr. H. Astley, M.B., M.R.C.P., D.P.M., M.R.C.S., L.R.C.P., Wyndcliffe, Granville Park, Aughton, near Ormskirk.
- Cooper, Mrs. Violet (Family Member).
- Crossley, R., 7 Hunston Avenue, Quarmby, Huddersfield.
- Cumming, Ian G., Molescroft Close, Beverley, E. Yorks.
- Doughty, R. W., 'Windcroft', Rolston Road, Hornsea.
- Drake, E., 19 Archbell Avenue, Brighouse.
- Ford, T. H., 39 Ashbury Drive, Sheffield 8.
- Garnett, Rev. P. M., 8 High Market Place, Kirbymoorside, York.
- Greenwood, Miss S. E., 213 Belle Vue Road, Leeds 3.
- Heron, Dr. A. M. R., 108 George Avenue, Green Road, Lupset, Wakefield.
- Horn, Mrs. K. M., Beechtrees, Gilling Road, Richmond, Yorks.
- Kilby, Miss M. B., Clifford, Boston Spa (Family Member).
- Lonsdale, Miss Bertha, 9 Glenaire Drive, Baildon, Shipley.
- Mackie, D. W., 11 Ashmore Avenue, Cheadle Heath, Stockport, Cheshire.
- Magee, L., A.M.I.Mech.E., 2 Lodore Place, Bolton, Bradford 2.
- Nettleton, C., Estate Office, Warter, York.
- Noble, J. W., 9 St. Mary's Mount, Leyburn.
- Oldham Public Libraries and Art Gallery, Oldham.
- Parkin, Miss Jean, 'Holgate', The Turnways, Leeds 6.
- Porritt, Miss M. E., 'Balbrennie', 38 Alwen Avenue, Grimscar, Huddersfield.
- Rhodes, R. J., 30 Alexandra Road, Bentley, near Doncaster.

Simpson, C., 44 Tinshill Road, Cookridge, Leeds 16.

Smith, C. C., M.A., Ph.D., 45 Moor Park Villas, Leeds 6.

Swallow, P., 17 Oatlands Drive, Otley.

Thornley, W. A., 45 Randal Street, Daubhill, Bolton, Lancs.

Ward, W. J. V., B.Sc., A.R.C.Sc., 'Haslemere', 23 Darlington Road, Stockton-on-Tees.

Deaths. It is with regret that we record the death during the year of the following members:

Astley, Capt. H.

Bamford, W.

Burkill, H. J.

Edmondson, F. H.

Holmes, E.

Wilson, W. A.

Resignations.

Lord Bolton.

Elliott, Mrs. G.

Fisher, C. E.

Houlding, C.

Goodin, A. W.

Graham, C.

Grayson, A. L.

Higgs, Miss M.

Lillis, Miss M. A.

Lisney, A. A.

Marsden, D.

Platt, J.

Raistrick, Dr. A.

Robinson, Mrs. E.

Walsh, G. B.

Wildblood, T. J.

Changes of Address.

Bramhill, R., 143 Fitzwilliam Road, Rotherham.

Firth, E. S., 23 Park View Crescent, Leeds 8.

Fenton, J. K., 15 Moorhead Crescent, Shipley.

Hemingway, G. E. C., 2 Blatchington Court Cottages, Seaford, Sussex.

Harrison, F. E., The Yorkshire Club, York.

Knight, W. J., 47 Bond Street, Englefield Green, Egham, Surrey.

Mason, E. W., Yew Tree Cottage, Sudbrook Lane, Petersham, Surrey.

Norris, J. R., 9 Richmond Avenue, Leeds 6.

Patrick, H. A., Scriven Stones, Forest Lane Head, Harrogate;

Smith, A. H. V., 69 Hallam Grange Crescent, Sheffield 10.

Tomlinson, Rev. C. F., Plas y Bryn, Llanbedr, Merioneth.

Tomlinson, T. B., 14 Ardmillan Terrace, Edinburgh 11.

FRESHWATER BIOLOGY

(E. Thompson): In the Dewsbury district the usual aquatic insects have appeared with, now and then, one of less common occurrence. Due to open-cast mining near the Howroyd Beck the water was fouled over a considerable length, but as the excavations moved away from the banks the water cleared, and many insects seemed to suffer only slight disturbance. Two associate members of our Union have shown an interest in the aquatic orders, and some of the work in this report is theirs.

The Yellow Sally, *Isoperla grammatica* (Poda) was about our streams by April, and the appearance of *Chloroperla torrentium* (Pict.), a rare species in this district, was a welcome surprise. Other Stone-flies found here were the usual ones, *Protone-moura meyeri* (Pict.), *Nemoura variegata* (Oliv.), *Leuctra fusciventris* (Steph.), *L. hippopus* (Kemp.) and a few *Capnia nigra* (Pict.).

At Bretton, the Mayflies fared rather well, with the pond olive, *Cloeon dipterum* (L.) producing large hatches of duns. Streams at Coxley and Thornhill have produced *Ecdyonurus venosus* (Fabr.), *Baëtis tenax* (Etn.), *B. rhodani* (Pict.), *B. pumilus* (Burm.), and *Leptophlebia marginata* (L.).

Amongst the Trichoptera, the *Limnephilus* species have been most abundant with *L. extricatus* McLach., *L. sparsus* Curt., and *L. lunatus* Curt. at Bretton. *Glyptotaelius pellucidus* (Retz.) was found to be common at Newmillardam, two Union members there at dusk examined many. At Coxley, *Rhyacophila oblitterata* McL. and *Agapetus fuscipes* Curt. were about, and *Drusus annulatus* (Steph.) appeared at Thornhill.

To end this report the Convener would like to thank our Secretary, Mr. K. G. Payne, for his help and interest in keeping this small section alive.

MAMMALS, REPTILES, AMPHIBIANS AND FISHES

Mammalia (Mrs. Hazelwood): Without doubt the most important mammalian consideration during the past two years has been the incidence of myxamatosis among the rabbit population. Now that the main wave of infection seems past it would appear that pockets exist, either of non-infected or of inoculated rabbits which already are beginning to recolonise the depopulated areas. It will take a little time before we can be sure of the true nature of these relict populations but accounts suggest that in the hunting districts at least no serious measures are being taken to press home extermination.

One side effect of the epidemic which is generally reported is a very marked increase in the numbers of Brown Hares, the 'bag' of the species on one shoot has almost made good those of the vanished rabbit as is shown in the following record:

			<i>Rabbits</i>	<i>Hares</i>
1953-54	...	...	180	62
1954-55	...	...	79	61
1955-56	...	...	27	150

Mr. Utley reported seeing, in early April, seven hares sitting in a circle of about 60 ft. diameter, in a grass field. All were sitting on their hind legs and facing the centre.

The numbers of the two Squirrels appear to have undergone no marked alteration, the Grey being held fairly well in check whereas the native Red makes slow progress in recovering its former abundance. It is remarkable that the areas in which the Red Squirrel is most abundant are those where its presence is largely if not entirely due to foreign introductions.

A somewhat surprising feature is the number of feral deer reported from various places in the county. There is something incongruous in the idea of a bunch of five red stags within two miles of the town centre of Rotherham, but deer have an amazing faculty for concealment.

As far as one can discover, all the larger carnivores are holding their own. It may be that an increased interest in badger-watching has led to the revelation of more sets but despite frequent gassings they seem to have increased with the decline of pheasant rearing. Foxes are plentiful and sustain a heavy persecution without apparent diminution. It was thought in some quarters that myxamatosis might have had a marked effect either upon their numbers or feeding habits but the rabbit was never the foxes' mainstay, smaller mammals snapped up from the grass forming the bulk of its food except, perhaps, when cubs are growing. Mr. Appleyard opened the stomach of a dog fox (measuring 44 in. from nose to tip of tail and weighing 14½ lb.); in it were the remains of two short-tailed voles and possibly the remnants of a third pelt.

A gamekeeper reported seeing a fox with four rabbits. The fox placed these rabbits in two pairs lengthwise with the hind legs overlapping; he then gathered the hind legs in his jaws, gave a flick of the head and the rabbits seemed to land astride his back, two on each side. The fox then quietly trotted off.

The Otter is seldom reported but this is not remarkable as apart from females with a growing litter, it is a species without a true fixed abode. It is a species which would repay organised investigation.

Stoats and Weasels are not readily subject to census but on the whole their numbers seem to be maintained. Obviously some species are bound to feel the disappearance of the rabbit but it may be some years yet before all the repercussions can be assessed.

Most of the Bat species to be expected have been reported and Mr. Edward Jackson's observations of Daubenton's Bat feeding on the River Ure prompt him to speculate as to the degree in which true vision enters into the final taking of prey. As Mr. Jackson watched he noticed that leaves, twigs and very small pieces of twig, etc., were floating down at the same time yet never once did a bat attempt to eat anything but an insect. Many times the bat would swoop down to a small twig but would always swerve away at the last moment. Miss Rob reports that a bat, no doubt Daubenton's, took her brother's fly while fishing. A Pipistrelle was seen hawking under sodium lights in one of Rotherham's main streets, in April. A Long-eared Bat with a broken wing took bluebottles from Mr. Garnett's fingers.

Among the lesser rodents and insectivores there has been little noteworthy, except for the unsubstantiated record, reported to Mr. Bramhill by Mr. Jim Griffith of a

nest of de Winton's mice, the Yellow-necked Mice, in the hedge of a pest officer at Conisbrough in August. It is a pity that what would seem to be the first mention of this species within the county should be unsupported by further evidence.

There is little to report concerning the reptiles.

Pisces (Mrs. Hazelwood): Among the freshwater fishes there is little to report although Mr. Procter suggests that the Grayling has undergone some major changes of distribution in recent years. Vanished from the Wharfe where it was traditionally abundant, it is now increased in the Ure and Nidd in which it is extending its range downstream.

Press reports indicate that no tunny have been caught at Scarborough for the second year in succession but there is no sustained reporting of the less common species landed by long-shore fishermen. It is a pity that our liaison in this respect is so inadequate since a great deal of faunistic interest must be completely unrecorded.

Since writing the above the following records have been received:

The numbers of Grey Squirrel, common throughout the Harrogate and Knaresborough area, appear to have been checked by the '2/- per tail' scheme of the County Agriculture Committee. A fox shot at Harewood had 'a stomach full of plum-stones.' A few years ago Mr. Robert Callick photographed a Tawny Owl carrying prey and sent a copy of it to Mr. H. N. Southern at Oxford who identified the prey as a Yellow-necked Mouse. The photograph was taken at Cawthorne.

The Slow-worm occurs commonly on the banks of the Nidd and Mr. D. M. Jackson exhibited two adults and several very young ones caught under beehives at Scotton, Nidderdale.

As a result of stunning operations on the River Rye at Helmsley, it was found that the numbers of Grayling and Trout were equal, 600-700 of each.

The following species are reported by Mr. Beck as occurring in the Harrogate-Knaresborough area: Salmon (River Ure only), Trout, Grayling, Perch, Ruffe, Bullhead, Three-spined Stickleback, Burbot (rare), Carp, Barbel, Gudgeon, Roach, Chub, Dace, Minnow, Bleak (River Ure), Loach, Pike, Eel, and Lamprey. A Trout weighing 7 lb. 9 oz. was caught at the weir, Boroughbridge, on April 6th, 1956.

In conclusion I should like to thank all those naturalists who, by their kind co-operation, have made this report possible and to hope that we will do even better for our next.

ORNITHOLOGY

Interim Report (Ralph Chislett): At the meeting held on March 10th the Report for 1955 was presented, discussed and approved; and subsequently published in *The Naturalist*, and reprinted.

A meeting organised by A. F. G. Walker in conjunction with the B.T.O. at Grantley Hall, during the week-end February 3rd to 5th was attended by many members. The subjects discussed were: The Wildfowl Counts (G. Atkinson-Willes) and Canada Geese (N. Blurton Jones and H. Boyd).

After the annual business meeting on October 20th, illustrated talks were given on 'Harriers' by R. Chislett and on 'Bats' by J. Armitage.

Spring was late; some Lapwings still had young too small for ringing on June 23rd. Many passerines had late broods in July and August. Swifts lingered late, and the passage of some other migrants was delayed. Passage Waders were recorded numerously; Spotted Redshanks being unusually frequent.

For a number of years the flooded inges at Brotherton have been a breeding area for numbers of Grebes, Ducks, Coots, etc. Since 1954 we have known that the Central Electricity Authority at Ferrybridge intended to pump the area to facilitate its use for the deposit of refuse. Our suggestion that the pumping should not take place during the birds' breeding season was agreed. In 1956 pumping continued through the spring despite our protests, with the results we had feared. The breeding Grebes left the area, and their nests and young. A few flightless young were rescued from the mud by the efforts of R. F. Dickens and others, including the R.S.P.C.A. Inspector. The apologia put forth for the C.E.A. was not convincing, and one felt the disaster could have been avoided if the responsible officials had cared sufficiently to act according to their promises. The aqueous content of the Ing was restored by the rainy late summer.

The Spurn Bird Observatory is having an average year, which always includes some surprises. The ringing of over 400 Snow Buntings in the early months gave us a good start; and over 2,000 birds have been ringed at the time of writing. Included are three species we have not ringed before—Fulmar, Wood Sandpiper, and Grass-hopper Warbler. Birds ringed at Spurn and recovered abroad include Blackbirds in Ireland, Germany, Denmark and Norway; a Meadow-Pipit in Spain; and a Cuckoo in Italy.

A Firecrest was watched; and D. B. Iles recorded a Red-headed Bunting, a species not previously on the Yorkshire list, but one that is imported in some numbers for sale to the cage-bird-minded, giving rise to doubt as to whether the bird may not have been an escape.

Day visitors to Spurn on fine Sundays have been numerous during the summer, but many Sundays were, perhaps not unhappily, wet; to which the fact that the reduced colony of Little Terns reared some young may be attributable, in part at least.

Many members have already sent in their records up to September 30th. Will all please send their notes well before the year end, and any later notes before the end of the second week in January.

CONCHOLOGY

(Mrs. E. Morehouse): Again there are few records of importance but the following notes cover the more interesting ones submitted.

In the Leeds and Liverpool Canal at Gargrave Mr. Dearing noted *Vivipara vivipara* L., *Bithynia tentaculata* L., *Limnaea stagnalis* L., *L. auricularia* L., *L. truncatula* Müll., *Planorbis corneus* L., *P. planorbis* L., and *Succinea putris* L. Colonies of *Arianta arbustorum* L. and *Helix hortensis* Müll. were seen on bankings but specimens had been damaged by burning of cut herbage. At Bank Newton near Gargrave some pink varieties of *Helix nemoralis* L. were found with one band. Some specimens were taken off hazel shrubs. At Barnoldswick and Foulridge *Limnaea pereger* Müll. was common with *Anadonta cygnea* L. (juv.) and very fine specimens of *Sphaerium corneum* L. On bankings, colonies of *Arianta arbustorum* L. (light coloured varieties), *Helix hortensis* Müll., and many *H. nemoralis* L. were seen. *Clausilia dubia* Jeff. was common on limestone walls at East Marton.

During a weekend visit of the Yorkshire Conchological Society to Malham, *Limnaea truncatula* Müll., *L. pereger* Müll., *Valvata cristata* Müll., and *Paludestrina jenkinsi* Smith were found on the south-east shore of the Tarn near the outlet. *Bithynia tentaculata* L., *Sphaerium corneum* L., and species of *Pisidea* were found together with *Limnaea truncatula* Müll., in marshy ground adjoining the Tarn. When returning from Malham the writer found specimens of *Helicigona lapicida* L. along a roadside wall.

Mr. E. Thompson found *Limnaea pereger* Müll., *L. stagnalis* L., *Planorbis carinatus* Müll., and *P. planorbis* L. in a small pond at Bretton. Fine *Vitrea cellaria* Müll. was also seen on the sides of an old wall. At Ripon he found a good colony of *Succinea putris* L. in marshy ground but the same species he reports as having apparently gone from an old station at Altofts near Wakefield.

When the Yorkshire Conchological Society visited New Miller Dam in September a good number of species was found including *Sphaerium lacustris* Müll., and *Dreissensia polymorpha* Pallas. Owing to heavy rains the walls where normally fine *Limnaea auricularia* L. is to be seen, were well covered with water.

ENTOMOLOGY

Coleoptera (J. H. Flint): It is fitting that this report should first pay tribute to the work done by Mr. G. B. Walsh, whose last report on Coleoptera appeared in *The Naturalist* in 1955. Mr. Walsh succeeded the late Dr. W. J. Fordham as recorder for Coleoptera. He had previously acquired a set of records compiled by Mr. E. G. Bayford, and the late Mr. M. L. Thompson and written up by the latter, and into these records he copied the Yorkshire ones of Dr. Fordham. This was a considerable undertaking, and Mr. Walsh has subsequently maintained these up to date until failing eyesight compelled him to resign his office. He has presented his set of records to the Section so that it can be maintained by future recorders and he has earned

the Section's gratitude. Mr. Walsh's collection has been acquired by the Scarborough Museum of Natural History.

Entomologists have not been favoured by the weather during the year but determined collecting by a few members has produced some interesting species, and on those days when the weather has been kind and the opportunity to collect has been seized, the beetles have been there, and in some cases uncommon beetles have been seen in quantity. It is difficult to assess the comparative abundance of beetles one season with another, but the writer's impression, is that the plant-feeding beetles have been scarcer than usual, and beating and sweeping have not been very productive. For other beetles, the season has seemed normal enough.

No report was compiled last year, and in consequence this covers the past two years. Nine species have been added to the county lists and there are fifteen new vice-county records. The following are the initials used:

J.A. J. Armitage.
H.E.F. Mrs. H. E. Flint.
J.H.F. J. H. Flint.

W.D.H. Dr. W. D. Hincks.
J.P. Miss J. Parkin.

† New County Records.

* New Vice-County Records.

- Dyschirius politus* (Dej.) (61). Kelfield, on the river bank, 14/5/56; J.H.F.
Bembidion monticola Stm. (64). Gaitskill Falls, near Buckden, 2/6/55; J.A. Ripon, stony banks of river, 25/6/55; J.H.F.
B. stephensii Crotch. (64). Ripon, sandy banks of river, 25/6/55; J.H.F. Barden Bridge, a single specimen, 22/9/55; J.A.
B. rupestre (L.) (64). Howstean Beck, 6/56; J.H.F. To be found commonly along stony streams running from the moors in Wharfedale and Nidderdale.
B. lunulatum (Fourc.) (*64). Templenewsam, Leeds, 27/3/46; Harewood Bridge, in flood refuse, 2/50; J.H.F.
Amara convexiuscula (Marsh.) (64). Meanwood, Leeds, on corporation tip, 15/5/55; J.H.F., 22/6/55; J.A. Otley, in gravel pits, 16/6/55; J.A. Usually from tidal river banks, and not previously recorded in this part of the county.
Fermia angustata (Duft) (64). Meanwood, a single specimen on the corporation tip, 13/5/55; J.A. It was found to be quite common here on exposed clinker, patches of clay and shale where the ground was devoid of vegetation (15/5/55 and subsequently J.H.F.). East Keswick, 9/5/54; J.A. Harewood Park, commonly on the ground and under bark where waste timber had been burned, 9/10/55; J.H.F. First discovered in Britain in 1916, and in Leeds in 1939, this species now seems firmly established around Leeds, but it has not yet been recorded elsewhere in the county.
Pristonychus terricola (Hbst.) (62). Catton Hall, 9/5/55; C. M. Rob (det. J.H.F.).
Agonum thoreyi Dej. (64). Golden Acre Park, Leeds, 23/11/55; J.H.F.
Haliphus fluviatilis Aubé. (64). Arthington, River Wharfe, 31/8/54; J.H.F.
Hygrotus impressopunctatus (Schall.) (64). Bolton Abbey, 2/6/55; J.A.
Oreodytes septentrionalis (Gyll.) (64). Fountains Fell Tarn, 8/55; J.H.F.
Hydroporus incognitus Sharpe (*63). Thorne; W. Bunting (1955, *Ent. mon. Mag.*, 91: 85). (64) Tarn Fen, Malham, 8/55; J.H.F. (teste. Prof. F. Balfour-Browne).
H. longulus Muls. (*63). Thorne Moors; W. Bunting (1955, *Ent. mon. Mag.*, 91: 85).
Agabus paludosus (F.) (64). Malham, gravelly outflow stream from Great Close Mire, 7/56; J.H.F.
A. arcticus (Pk.) (64). Barden West Moor, apparently common in a small reservoir, 25/8/55; J.P.
Thanatophilus sinuatus F. (63). Pontefract, 16/6/54; J.A.
†*Leiodes flavicornis* (Bris.) (64). Malham, Tarn House Plantation, 7/56; J.H.F. (det. W.D.H.).
Anthophagus caraboides (L.) (*65). Richmond, 30/9/56; W.D.H.
Trogophloeus corticinus (Grav.). Mr. W. O. Steel has shown (1956, *Ent. mon. Mag.*, 92: 265) that this species has been mixed in collections with *T. subtilicornis* (Roub.) which he has now added to the British list. Previous records for *corticinus* must be deleted unless they can be confirmed. Records for *corticinus* given by Mr. Steel include the following for Yorkshire: (61) Spurn, (64) Malham Tarn, Askham Bog and the banks of the Wharfe at Bolton Percy.

- †*Trogophloeus subtilicornis* (Roub.) (64). Bolton Percy, banks of Wharfe; banks of Ouse near Kelfield. (65) Boroughbridge, banks of Ure; W. O. Steel.
- Stenus biguttatus* (L.) (64). Ripon, commonly in muddy places on river bank 28/5/56; J.H.F.
- S. guynemeri* DuV. (63). Hardcastle Crag, not uncommonly in wet moss by waterfall, 1/9/55; J.A. and J.P.
- †*S. umbratilis* Casey. (64). Malham Tarn Fen, 8/55; J.H.F.
- Gauropterus fulgidus* (F.) (64). East Keswick, 9/5/54; J.A. A rare species.
- Staphylinus stercorarius* Ol. (*64). Kilsnsey, 18/8/55; J.A.
- †*S. cupreus* Ross. (62). Cayton Bay, 13/9/56; J.H.F. A single specimen was found on the beach in warm sunshine. Joy indicates that this is probably a common species previously confused with *S. aeneocephalus* Deg., but though the latter has been recognised from many widespread localities in Yorkshire since the separation of the two species in Britain, this is the first specimen of *cupreus* to be recognised.
- Quedius auricomus* Kies. (64). Howstean Beck, Nidderdale, 6/56; J.H.F.
- Q. umbrinus* Er. (*63). Hardcastle Crag, in wet moss by waterfall, 1/9/55; J.P.
- Hister marginatus* Er. (62). Duncombe Park, Helmsley, in a mole's nest, 17/5/56; J.A. and J.P. (det. J.H.F.). A scarce beetle in Yorkshire. The previous records are all from the Eastern side of the county, but it does not appear to have been reported since 1919.
- †*Cantharis pallida* Goeg. (62). Gormire, 24/6/56; J.A. (64) Scarcroft, 27/6/54; Fountains Abbey, 21/6/56; J.A. These are the only authentic records of this species to hand since the separation of *C. cryptica* Ashe (1946, *Ent. mon. Mag.*, 82, 138). *C. cryptica* appears to be the common species and more records of both species are required.
- C. cryptica* Ashe (*64). Austwick Moss, 6/47; Pool, 6/46; Golden Acre, 6/56; J.H.F. Fountains Abbey, 21/6/56; J.A. and J.P. Previously recorded from V.C.s 62 and 63.
- Malthodes fuscus* (Walt) (64). Malham, Far Tarn Fen, 27/7/56; a single female; W.D.H.
- M. flavoguttatus* Kies. (*64). Malham, Far Tarn Fen, a single female, 27/7/56; W.D.H.
- †*Elater pomorum* Hbst. (62). Duncombe Park, in moss on rotten stump, a single specimen, 17/5/56; J.A. (teste W.D.H.).
- Hypnoidus dermestoides* (Hbst.) (64). Arthington, sandy bank of river, 22/5/56; J.H.F.
- Corymbites impressus* (F.) (64). Malham Tarn, by sweeping at night, 7/56; J.H.F.
- Sericus brunneus* (L.) (64). Malham Tarn, 7/56; H. M. Russell.
- Dirhagus pygmaeus* (F.) (62). Pickering, on oak, 30/6/56; H.E.F. Apart from a recent record from Western Ross-shire, and the previous record from Pickering by Mr. A. Smith, all other records for this species appear to be from the South.
- Sternocera laevigata* Oliv. (Buprestidae). A single specimen of this brilliant Indian beetle was taken walking on the pavement in Knaresborough in February, 1956, and was identified by Dr. Hincks. (A. E. Winter.)
- Carpophilus ligneus* Mur. (*64). Gledhow Valley, Leeds, a single specimen by sweeping, 9/55; J.H.F. The only other record from Yorkshire is of specimens found in dried figs at Scarborough in 1950.
- C. sexpustulatus* (F.) (64). Harewood Park, a single specimen in *Pholiota squarrosa*, 9/10/55; J.H.F. A rare species, taken by Dr. Hincks in almost the same spot in 1923.
- Pocadius ferrugineus* (F.) (64). Harewood Park, commonly in *Lycoperdon perlatum*, 9/10/55; J.H.F. (62). Gundale, Pickering, 12/7/56; J.A.
- Rhinophagus perforatus* Er. (64). Malham Tarn, under beech bark, 7/56; J.H.F.
- Antherophagus nigricornis* (F.) (64). Arthington Bank, by sweeping at evening, 8/56; J.H.F.
- Atomaria fimetarii* (Hbst.) (64). Meanwood, Leeds; a single specimen from *Coprinus comatus*, 21/9/55; J.H.F. A rare species, last recorded in the county in 1909.
- Bitoma crenata* (F.) (*64). East Keswick, 13/3/55; J.A.
- Scymnus haemorrhoidalis* Hbst. (*62). Gundale, Pickering, 30/6/56; H.E.F. The only other Yorkshire record is from Skipwith Common.
- S. nigrinus* Kug. (62). Pickering, on larch, 30/6/56; H.E.F.
- Stegobium panicea* (L.) (64). Leeds, in a kitchen cabinet, 6/55; J.H.F.

- Tipnus unicolor* (Pill.) (64). Kirkstall Abbey, abundantly in a thick deposit of pigeon droppings, 21/4/55; J.A.
- †*Aphodius brevis* Er. (64). Arthington, sand bank at Castley Ford, 6/5/56; J.H.F.
- Asemum striatum* (L.) (*64). Harrogate, a large and flourishing colony in pine stumps, 24/6/55; F. A. Hunter (1956, *Ent. mon. Mag.*, **92**, 134).
- Leptura quadrifasciata* (L.) (62). Gundale, Pickering, 30/6/56; W.D.H., 12/7/56; J.A. Newtondale, Pickering, 30/6/56; C. Bramley. (63). Doncaster, 20/8/56; E. F. Gilmour.
- Aromia moschata* (L.) (64). Askham Bog, a single specimen, 24/7/54; J.A. Not found in other parts of the county for many years, but specimens are still found regularly at intervals in Askham Bog.
- Clytus arietis* (L.) (64). Meanwood, Leeds, 27/5/56; J.A. A common species in the east and south-east of the county and along the Vale of York, but not previously recorded in this district.
- Anaclyptus mysticus* (L.) (63). Bray, a single specimen, 5/6/55; L. C. Ballard (teste J.H.F.).
- Donacia thalassina* Germ. (*62). Gormire, numerous, 28/6/56; J.A. and J.P. (det. J.H.F.).
- D. cinerea* Hbst. (61). Howden, on Typha, 24/5/56; J.A. and J.P.
- Cryptcephalus aureolus* Suffr. (62). Gundale, Pickering, 30/6/56; Miss G. W. Lord (det. W.D.H.). A rare species in Yorkshire, only known from this locality and Hackness.
- Chrysolina fastuosa* (Scop.) (63). Sowerby Bridge, a colony on *Galeopsis tetrahit*, August and September, 1953-54-55; R. Watling (det. W.D.H.). Only recorded previously from Malham and Thorne Moor.
- Mantura matthewsi* (Curt.) (*64). Etchell Crag, Thorner, common on *Helianthemum vulgare*, 12/7/56; J.H.F.
- Brachytarsus nebulosus* (Forst.) (64). Kearby, near Harewood, a single specimen on hawthorn, 6/55; J.H.F.
- Otiorrhynchus nodosus* (Muell.) (64). Fountains Fell summit, 7/56; W.D.H. A very local species previously recorded in V.C. 64 only from Beamsley Beacon.
- †*Rhyncolus lignarius* (Marsh.) (63). Sheffield, numerous in damp floor boards; possibly attracted from the woods at the rear of the house in which they were taken; S. Shaw.
- Dorytomus melanophthalmus* Pk. (64). Ripon, commonly on one willow on the river bank, 25/6/55; J.H.F.
- †*Thryogenes nereis* (Pk.) (62). Gormire, quite commonly among sedges, 28/6/56; J.A. and J.P. (det. J.H.F.). Recorded from Yorkshire in Stephen's *Manual*, though no locality was given, and it has not been recorded since.

Lepidoptera (F. Hewson): It is well known that Lepidopterists regard four years out of five as 'below the average', but there will be little dissent regarding our experience of 1956. The cold nights which persisted into mid-May and the later frequent heavy rains until mid-August and the lack of sunshine were sufficient to limit field-work even if insects had been about in normal numbers. That they were fewer in numbers was apparent to all. This scarcity is evidenced by the fact that seventeen correspondents in early October made only twenty-five references to butterflies and these of twenty-one species. C.R.H. noted that *Argynnis euphrosyne* L. (Pearl-bordered Fritillary), *Hamearis lucina* L. (Duke of Burgundy Fritillary) and *Erynnis tages* L. (Dingy Skipper) were very common at Pickering on May 22nd, but this was an exception. Four *Vanessa cardui* L. (Painted Lady) were reported, Knaresborough (1), 6/8 (W.B.); and Spurn (2), 22/6 and (1), 24/6, (D.W.). S.M.J. noted a single *Eumensis semele* L. (Grayling) in the East Riding in August 1955 and it seemed to be quite established this year, having been seen from late July to early September. D.W. has also noticed it in fair numbers. S.M.J. found that *Nymphalis io* L. (Peacock) was fairly common after hibernation in one area near Selby in May and although late was up to its usual numbers in August and September. The three 'Whites' have certainly not been common this year and only one *Gonepteryx rhamni* L. (Brimstone) was recorded, at Bishop Wood in May (S.M.J.). D.W. sent me a most interesting record of three stations for *Strymon w-album* Knoch (White-Letter Hairstreak) and believes that other colonies may be found.

Of moths the Sphingidae were apparently best able to overcome the weather conditions, many of those observed were undoubtedly immigrants, yet the doyen

of immigrants, *Plusia gamma* L. (Silver Y), was in much reduced numbers. Thirteen *Acherontia atropos* L. (Death's Head Hawkmoth) were reported, three at Doncaster, three at Middlesbrough, two at Wakefield, two at Pontefract and ones at Bradford, Shipley and Wombwell. Eleven *Herse convolvuli* L. (Convolvulus Hawk) were reported. Five at Shipley, along with one from the nearby Cottingley Bridge, Bingley, lead one to suppose that they must have fed up there, the progeny of an immigrant. Two were taken at Doncaster, and ones at Burley-in-Wharfedale, Huddersfield and Wombwell. *Smerinthus ocellatus* L. (Eyed Hawk), which regularly occurs in the East Riding, is worthy of notice elsewhere. These, and other interesting occurrences, are detailed below.

Both W.E.C. and J.B. told me of larvae apparently coming to light. W.E.C. noted three or four species, including *Triphaena pronuba* L. (Large Yellow Underwing), on the perspex collar of the trap, as though they were enjoying the warmth from the bulb, and since his trap is set on a tar macadam path the larvae must have purposely climbed the side. J.B. noted them on the trap, beneath it (being raised on a box), and even inside. Possibly in the latter case they had lost their footing because of moisture, either rain or dew. I have not seen or heard of any other record though probably others have noticed similar occurrences.

KEY TO INITIALS.—S. G. Appleyard, E. W. Aubrook, W. Beck, J. Briggs, W. E. Collinson, I. Downhill, E. F. Gilmour, C. R. Haxby, F. Hewson, J. Hooper, J. Hudson, S. M. Jackson, G. I. McCabe, Joyce Payne, D. Wade.

Eilema lurideola Zinck. (Common Footman), 4, Skipwith Common (M.V.), 21/7, of a large bright form, J.B., C.R.H.

Cybosia mesomella L. (Four-Dotted Footman), c. 6, Skipwith Common (M.V.), 21/7, J.B., C.R.H., F.H.

Bena prasinana L. (Green Silver Lines), Elland, imago and larvae, W.E.C.

Apatele leporina L. (Miller), Triangle, Halifax (M.V.), 12/6, W.E.C.; Bradford (M.V.), 28/6, J.B.

Nonagria dissoluta Treit. (Brown-Veined Wainscot), Skipwith Common (M.V.), 4/8, J.B. A melanic specimen much darker than South's illustration.

Chilodes maritima Tausch. (Silky Wainscot), Skipwith Common, 27/7, S.M.J.

Panemeria tenebrata Scop. (Small Yellow Underwing), Secker Vale, 20/5, per J. Ho.

Rhizedra lutosa Hueb. (Large Wainscot), Bradford (M.V.), 26/9, J.B.

Arenostola elymi Treit. (Lyme Grass), Spurn, several 30/6, S.M.J.

Thalophila matura Hufn. (Straw Underwing), Knaresborough (M.V.), 2/8, W.B.; Selby, 5/8, car headlights, J.B.

Xylophasia scolopacina Esp. (Slender Brindle), Selby, 7/8, S.M.J.; Triangle, Halifax (M.V.), 12/8, 13/8, W.E.C.

X. furva Schiff. (Confused), near Sheffield, 1/9, S.M.J.

Celaena leucostigma Hueb. (Crescent), Skipwith Common, 19/8, S.M.J.

Agrotis vestigialis Hufn. (Archer's Dart), 2, Thorganby Common, 14/7, S.M.J.; Skipwith Common (M.V.), 21/7, J.B.

A. ripae Hueb. (Sand Dart), 4, Spurn, 30/6, S.M.J.

Amathes umbrosa Hueb. (Six-Striped Rustic), c. 8, Skipwith Common (M.V.), 4/8, J.B., C.R.H.

Axylia putris L. (Flame), c. 5, Skipwith Common (M.V.), 21/7, J.B., C.R.H.

Anaplectoides prasina Schiff. (Green Arches), Skipwith Common (M.V.), 21/7, C.R.H.; J.B. and C.R.H. queried the *Griposia aprilina* L. (Merveille du Jour) recorded for Newtondale (*Naturalist*, 1956, 149), and this turns out to be the much rarer *A. prasina* Schiff.

Tiliacea aurago Schiff. (Barred Sallow), Knaresborough (M.V.), 11/9, W.B.

Cirrhia gilvago Schiff. (Dusky-Lemon Sallow), Knaresborough (M.V.), 15/9, I.D.

Griposia aprilina L. (Merveille du Jour), Knaresborough (M.V.), 22/9, W.B. See also *Anaplectoides prasina* above.

Panolis griseovariegata Goeze (Pine Beauty), 12, Bishop Wood (M.V.), 5/5, J.B., C.R.H.

Heliophobus albicolon Hueb. (White Colon), Spurn, 30/6, S.M.J.

H. sordidus Bork. (Large Nutmeg), one near Selby, 15/6, two at Spurn, 30/6, S.M.J.

Eustrotia uncula Clerck (Silver Hook), Skipwith Common, 21/7, fairly common in evening daylight, though only one taken in M.V. trap after dark, J.B., C.R.H.

- Acherontia atropos* L. (Death's Head Hawkmoth), taken from a truck loaded with timber on a wharfeside at Middlesbrough and taken to the Dorman Memorial Museum, 10/9, G.I.McC.; Crigglestown, Wakefield, 10/9, per J. Ho.; Horbury, Wakefield, c. 10/9, per J. Ho.; attracted by lights in Poole Hospital, Nunthorpe, Middlesbrough, 11/9, J.I.McC.; Low Laithe Farm, Wombwell, 12/9, J.Hu.; found clinging to the inside of an old jacket which was hanging outside on a wharf at Middlesbrough, 13/9, G.I.McC.; Pontefract, 19/9, S.G.A.; Bradford, 22/9, per J.B.; three, apparently all freshly emerged, were taken to the Waterdale Museum, Doncaster, in September, E.F.G.; Carleton, near Pontefract, 2/10, S.G.A.; Shipley, 5/10, per J.B.
- Smerinthus ocellatus* L. (Eyed Hawk), Knaresborough (M.V.), 23/6, W.B.; Wombwell, 23/6, J. Hu.; Triangle, Halifax (M.V.), 29/6, W.E.C.; Skipwith Common (M.V.), 21/7, J.B., and larva, F.H.
- Celerio galii* Von Rott. (Bedstraw Hawk), one taken at Pontefract in early summer was taken to the Pontefract Boys' County Secondary School Natural History Club, S.G.A.
- Herse convolvuli* L. (Convolvulus Hawk), two were taken to the Waterdale Museum, Doncaster, in August, one appeared to be freshly emerged, E.F.G.; Shipley Market Place, 23/8, Saltaire, Shipley, 3/9, Windhill, Shipley, 5/9, per J.B.; Burley-in-Wharfedale, 7/9, per A. E. Pullan; Norwood, Shipley, 8/9, per J.B.; Longroyd Bridge, Huddersfield, 8/9, per E.W.A.; Wombwell, 9/9, per J. Hu.; Saltaire, Shipley, 13/9, Cottingley Bridge, Bingley, 20/9, per J.B.
- Plusia interrogationis* L. (Scarce Silver Y), on moor at West End, Blubberhouses, 21/7, I.D.
- Sterrhia inornata* Haw. (Plain Wave), 2, Skipwith Common (M.V.), 21/7, J.B., C.R.H.
- S. dimidiata* Hufn. (Single Dotted Wave), Skipwith Common (M.V.), 21/7, J.B.
- Geometra papilionaria* L. (Large Emerald), Knaresborough (M.V.), 6/7, W.B.; c. 3, Skipwith Common (M.V.), 21/7, J.B., C.R.H.
- Eupithecia trisignaria* H.-S. (Triple-Spotted Pug), larvae, Bishop's Wood, 30/9, S.M.J.
- Lygris populata* L. (Northern Spinach), common at 2,000 ft. on Buckden Pike, 1/9, 'Much brighter and more plainly marked than South's illustration.' J.P.
- Epirrhoe galiata* Schiff. (Galium Carpet), Knaresborough (M.V.), 30/6, I.D.; Spurn, 30/6, S.M.J.
- Hydriomena ruberata* Frey. (Ruddy Highflyer), bred 6/5 from Skipwith larva, S.M.J.
- Perizoma ericetata* Curt. (Heath Rivulet), Grassington, 6/8, S.M.J.
- P. flavofasciata* Thun. (Sandy Carpet), Bradford (M.V.), 22/6, Skipwith Common (M.V.), 21/7, J.B.
- Xanthorhoe ferrugata* Clerck (Dark-Barred Twin-Spot Carpet), Knaresborough (M.V.), 12/6, I.D.
- Calostigia pectinataria* Knoch (Green Carpet), Skipwith Common, 21/7, common before dusk, fairly common after dark at M.V., J.B., C.R.H.
- Brephos parthenias* L. (Orange Underwing), Birstwith, 20/4, W.B.
- Biston betularia* L. (Peppered), two typical of ninety-five taken in M.V. trap at Bradford, J.B.; one typical in M.V. trap at Triangle, Halifax, W.E.C.
- Hygrochroa syringaria* L. (Lilac Beauty), Knaresborough (M.V.), 22/7, I.D.
- Habrosyne derasa* L. (Buff Arches), several at Knaresborough (M.V.), 6/7, W.B.; c. 12, Skipwith Common (M.V.), 21/7, J.B.; C.R.H., F.H.
- Clostera pigra* Hufn. (Small Chocolate-Tip), larvae still frequent on Strensall Common, S.M.J.
- Pterostoma palpina* L. (Pale Prominent), 2, Skipwith Common (M.V.), 21/7, J.B., C.R.H.
- Cerura furcula* Clerck (Sallow Kitten), larva at Skipwith Common, 21/7, J.B.
- Drepana falcataria* L. (Pebble Hooktip), Knaresborough (M.V.), 2/7, W.B.; Skipwith Common (M.V.), 4/8, J.B.
- D. binaria* Hufn. (Oak Hooktip), Knaresborough (M.V.), 15/9, I.D.
- Lasiocampa quercus* L. f. *callunae* Palmer (Northern Eggar), C.R.H. noted larvae in enormous numbers on Rombalds Moor and on June 3rd W.B. saw numbers at Pateley Bridge. This abundance is only noted in the even years.
- Trichiura crataegi* L. (Pale Oak Eggar), bred 26/8 from Skipwith larva, S.M.J.
- Xygaena trifolii* Esp. (Five-Spot Burnet), three colonies at Bradford not previously known were reported to and confirmed by J.B.—at Horsfall Playing Fields, at Oakenshaw and at Little Horton.

Xeuzera pyrina L. (Leopard), Skipwith Common (M.V.), 21/7, J.B.; one was taken to the Waterdale Museum, Doncaster, in August, E.F.G.; four were taken in the Barnsley district last year, two this, one of the latter laid over a hundred ova, which were placed on a poplar tree, J.Hu.

Hemiptera (J. H. Flint): August and September are usually the best months of the year for collecting Hemiptera, and so the cool, dull summer has had the expected effect and collecting has not seemed very rewarding. Nevertheless, some very interesting species have been noted and there are seven species to add to the county list, one of them being new to the British Isles. Apart from the occasional visits to the county of hemipterists, the only work being done is that of the writer and this has been rather erratic during the past year except for the work done during the Section's visit to Malham Tarn. Except where stated, the records listed below are those of the writer.

HETEROPTERA

Zicrona caerulea (L.) (61). Allertorpe Common, 27/7/55; T. B. Kitchen.

Macroparius thymi (Wolff) (*64). Meanwood, Leeds, 9/55.

Trapezonotus arenarius (L.) (*64). Malham, Tarn House Plantation, 7/56.

†*Deraeocoris scutellaris* (F.) (63). Guisborough, 17/7/48; W. J. Le Quesne (1954, *Ent. mon. Mag.*, **90**, 250).

Teralocoris viridis D. & S. (*64). Malham, Tarn Fen and Great Close Mire, 7/56.

Quite commonly, by sweeping low vegetation and on *Salix*. A rare species, only known from seven northern English counties and from Scotland. It has been recorded in Yorkshire only from Semerwater. An upland and northern species found in marshy places.

Heterocordylus leptocerus (Kirsch.) (62). Pickering, on broom, 30/6/56; Mrs. H. E. Flint.

†*Tinicephalus hortulanus* (Meyer-Duer) (64). Etchell Crags, Thorner, on *Helianthemum*, 5/7/56. A southern species, rare in the north.

†*Gerris asper* (Fieb.) (63). Balne ponds, near Snaith, 28/9/52; J. Horsman. (64). Malham Tarn, 8/56. Known at Malham for some years but no record appears to have been published. It was found in some numbers on flood water on Tarn Fen and appears to shun open water and stick to the dense reed beds.

Velia saulii Tam. (64). How Stean Beck, Nidderdale, 6/56.

Salda mulleri Gmel. (*64). Ilkley Moor, c. 1,000 ft., 7/53. Previously reported only from Goathland.

S. morio Zett. (*64). Ilkley Moor, c. 1,000 ft., 7/53. Malham Tarn, 8/55, 7/56. Previously reported only from Keighley.

Corixa striata L. The common species known by this name in Britain is not the true *striata* L. but *dorsalis* Leach, and this name should be substituted for *striata* in the Yorkshire records. The true *striata* L. has now been identified in south-east England.

HOPTERA

Centrotus cornutus (L.) (62). Pickering, on bramble, 30/6/56; Mrs. H. E. Flint.

Megophthalmus scanicus (Fall.) (64). Lindley Reservoir, Washburndale, 7/8/56.

Idiocerus tremulae Est. (*64). Adel, Leeds, 8/56.

†*I. distinguendus* Kbm. (64). Adel, Leeds, 8/56.

Euphelix cuspidata (F.) (*64). Lindley Reservoir, 7/8/56.

Aphrodes albifrons (L.) (64). Lindley Reservoir, 7/8/56.

†*Dellocephalus obenbergeri* (Dlab.) (64). Fountains Fell, at approximately 2,000 ft., 7/56. The first British record of this species, previously reported from France and Czechoslovakia. It closely resembles the common *D. abdominalis* (F.), from which it may be distinguished by the male genitalia.

†*D. xanthoneurus* (Fieb.) (64). Malham Tarn, Ha Mire, 7/56.

Stictocoris preyssleri (H.-S.) (*64). Gledhow Valley, Leeds, 9/55.

†*Macrostelus viridigriseus* Edw. (64). Gledhow Valley, Leeds, a single male, 9/55.

M. horvathi (Wag.) (64). Malham Tarn, commonly on *Juncus*, 7/56.

Erythroneura rhamnicola (Horv.) (64). Alwoodley, 9/53.

Typhlocyba cruenta H.-S. v. *douglasi* Edw. (*64). Malham Tarn, on beech, 7/56.

Empoasca butleri Edw. (64). Adel, Leeds, 8/56.

Alebra wahlbergi (Boh.) (*64). Alwoodley, Leeds, two specimens from hawthorn, 9/54. Previously only recorded within the county at Brocketts in 1940.

Neuropteroid Orders (W. D. Hincks): In regard to the several small orders for which I act as recorder, there is nothing to report this season. As mentioned in previous reports most of these groups of insects are relatively well worked in Yorkshire and few additions can be expected. The few specimens collected during the year are all well-known and often-recorded species which do not call for special comment.

Hymenoptera (W. D. Hincks): It will be claimed by most entomologists that 1956 was the worst season on record, perhaps with some justice in the case of one or two orders of insects, but actually what will usually be meant is that it was the worst season for entomologists, not necessarily for the insects themselves. Apart from the sun-loving Aculeata, which were naturally very seriously affected by the continuous wet and lack of sun, I could not claim that the Parasitica, by far the largest section of the Hymenoptera, were not just as plentiful this year as in any other season. They were plentiful enough everywhere but the difficulty was to collect them. Sweeping, the normal method, was usually out of the question because of the wet vegetation, and the slower method of individual netting from the tops of the plants had to be adopted. In this way plenty of insects could be collected merely involving more time and greater concentration. Parasitica were abundant during the Pickering meeting at the end of June, at Malham in July and August, at Wrea Head in September, and even as late as mid-October, as I write this report.

An order as extensive as the Hymenoptera, which now includes over 6,300 British species, is really beyond the competence of a single recorder, especially when we remember that it is the most neglected of all orders of British insects, and that identifications in many families will remain impossible until they have been revised, of which there appears to be little hope at present. All that can be done is to make a little progress in some sections of the order as opportunities occur. The Symphyta or sawflies bulks very large in the present report as we have had the great advantage of a visit to Yorkshire, during May and June 1955, from Mr. R. B. Benson of the British Museum. The impetus given by his visit and his ready help over many years has placed the Symphyta with the Aculeata as the best worked sections of the order.

An interesting feature of the Section's investigation of Malham Tarn, where Mr. Benson also collected in 1955, is the number of Scottish species which have been discovered there, several of which are mentioned in a paper recently published by Mr. Benson (1956, *Ent. mon. Mag.*, **92**, 166). This point will emerge even more clearly when the combined reports of the Section's work are published.

Much of this season's material, at least that collected in late summer and autumn, the best time for parasitic Hymenoptera, inevitably remains unidentified, so that the following list of additions is based largely, though not entirely, on specimens collected in previous seasons. It includes three species new to Britain, 42 new county, and 55 new vice-county records. I am most grateful to Messrs. Benson, Eady, Kerrich, Kloet and Shaw for assistance in the identification of many species.

ADDITIONS TO THE YORKSHIRE HYMENOPTERA, 1955-56

ABBREVIATIONS.—R.B.B.=R. B. Benson; R.D.E.=R. D. Eady; F.W.E.=F. W. Edwards; W.D.H.=W. D. Hincks; G.J.K.=G. J. Kerrich; G.S.K.=G. S. Kloet; S.S.=S. Shaw; W.H.T.T.=W. H. T. Tams; W.A.T.=W. A. Thwaites; J.W.=J. Wood.

‡=New to Britain. †=New to County. *=New to Vice-County.

SYMPHYTA

†*Pamphilus histrio* Latr. Allertorpe (61), 28/6/42, 1♀, W.D.H. (R.B.B.). Benson (1951, *Handb. Ident. Brit. Ins.*, **6** (2a), 12) records this species from no further north than Staffs, except for a single record for Inverness.

**P. varius* (Lep.) Bingley, St. Ives (63), 17/6/44 (*Naturalist* 1945: 35, recorded as *P. vafer* in error); 7/7/45, 11/6/46, 25/6/49, J.W. (W.D.H.)

- **Pamphilus vafer* (L.) Allerthorpe (61), 28/6/42, 1♀, W.D.H. (R.B.B.).
- **P. pallipes* (Zett.) Bingley, St. Ives (63), 8/6/46, 1♀, J.W. (R.B.B.). Askham Bog (*64), 21/5/34, 1♀, W.D.H. (R.B.B.).
- †*Cephus cultratus* Evers. Allerthorpe (61), 28/6/42, 1♀, W.D.H. (R.B.B.).
- **C. pygmaeus* (L.) Masham (65), 10/6/48, 1♂, W.A.T. (W.D.H.).
- †*Trichiosoma sorbi* Htg. Malham Tarn (64), Waterhouses Lane, 19/6/54, 2♀, W.D.H. (R.B.B.).
- **Tenthredo acerrima* Benson (*sulphuripes* Benson *nec* Kriechb.) Malham Tarn Fen (64), 14/6/54, W.D.H. (R.B.B.). Oxenber Woods, near Austwick (64), 29/5/55, 2♀, R.B.B.
- †*Rhogogaster chambersi* Benson Malham Tarn House Plantation (64), 16/6/54, 1♀, W.D.H. (R.B.B.).
- **Perineura rubi* (Panz.) Malham Tarn Fen (64), 31/5-6/6/55, 6♂, R.B.B.
- **Dolerus asper* Zadd. Colden Valley (63), 14/4/43, Bingley, St. Ives (63), 13/5/50, J.W. (G.S.K.).
- **D. pratensis* (L.) Malham Tarn Fen (64), 1♀ on *Equisetum*, 5-6/55, R.B.B.
- †*Apethymus braccatus* (Gmel.) Forge Valley (62), 8/9/52, 1♀, W.D.H.
- **Empria immersa* (Klug) Malham Tarn Fen (64), 1♂ on *Salix* sp., 6/6/55, R.B.B.
- †*E. pumila* (Knw.) Malham Tarn Fen (64), 27-31/5/55, 1♂, 1♀ on *Filipendula ulmaria* (L.) Maxim., R.B.B.
- **E. baltica* Conde Malham Tarn House Plantation (64), 16-18/6/54, W.D.H. (R.B.B.). Tarn Fen, 27/5-6/6/55, plentiful on *F. ulmaria*, R.B.B.
- **E. liturata* (Gmel.) Malham Tarn Fen (64), 27/5-6/6/55, common, R.B.B.
- **E. alector* Benson Malham Tarn Fen (64), 27/5-6/6/55, plentiful on *F. ulmaria*, R.B.B.
- †*E. longicornis* (Thoms.) Malham Tarn Fen (64), 1-6/6/55, 1♂, R.B.B.
- **Monophradnoides puncticeps* (Knw.) Oxenber Woods, near Austwick (64), 1/6/55, 1♀, R.B.B.
- **M. waldheimii* (Gimm.) Malham Tarn Close (64), common on *Geum rivale* L., 27/5-6/6/55, R.B.B.
- **Tomostethus nigrinus* (F.) Keighley, Holmehouse Wood (63), 5/6/43, 1♀, J.W. (W.D.H.).
- †*Strongylogaster mixta* (Klug) Malham Tarn Fen (64), 3♂ among ferns, 31/5-6/6/55, R.B.B.
- **Brachythrops flavens* (Klug) Malham Tarn Fen (64), common, 27/5-6/6/55, R.B.B.
- **Fenus ulmi* Sund. Bingley, St. Ives (63), 9/6/45, 1♀, J.W. (G.S.K.).
- †*F. pusilla* (Lep.) Bingley, St. Ives (63) 9/6/45, 18/7/47, 8/7/50 J.W., (G.S.K.).
- †*Fenella monilicornis* Thoms. Wharfe, near Austwick (64), 1/6/55, 3♀, R.B.B. (*Ent. mon. Mag.*, **92**, 1956, 166). This species was first added to the British List by Benson in 1953 (*Ent. mon. Mag.*, **89**, 150) from Inverness-shire. The above is the first English record. The insect is thought to be associated with *Geranium sylvaticum* L.
- **Heterarthrus aceris* (MacL.) Malham Tarn House Plantation (64), 1♀ from *Acer pseudo-platanus* L., 4/6/55, R.B.B.
- **Priophorus pallipes* (Lep.) Malham Tarn Fen (64), 16/6/54, 1♀, W.D.H. (R.B.B.). Tarn Close, 31/5/55, 1♀, R.B.B.
- **Hoplocampa pectoralis* Thoms. Newtondale (62), 1/7/56, W.D.H. (*The Naturalist*, 1956, 148).
- †*H. alpina* (Zett.) Oxenber Woods, Austwick (64), 1♀ on *Sorbus aucuparia* L., 1/6/55, R.B.B.
- †*H. ariae* Bensch Malham Tarn Fen (64), 18/6/54, 1♀, W.D.H. (R.B.B.). The larvae feed on the fruits of *Sorbus aria* (L.) Crantz, but at Malham they must be associated with *S. rupicola* (Syme) Hedl. or *intermedia* (Ehrh.) Pers.
- **Euura saliceti* (Fall.) Malham Tarn Fen (64), common, 16-18/6/54, W.D.H.; adults and galls abundant on *Salix nigricans* Sm. and *atrocinerea* Brot., etc., 5-6/55, R.B.B.
- **Pontania leucosticta* (Htg.) Oxenber Woods, Austwick (64), 1/6/55, 1♀, R.B.B. A leaf-edge roller on various *Salix* spp.
- †*P. leucaspis* (Tischb.) Malham Tarn Fen (64), 5♂, 1♀ on *Salix nigricans*, etc., 27/5-6/6/55, R.B.B. A leaf-edge roller of various *Salix* spp.
- †*P. apicifrons* Malaise Malham Tarn Fen (64), 1-6/6/55, 2♂, 1♀, R.B.B. (*Ent. mon. Mag.*, **92**, 1956, 166). Only previously recorded from Scotland. A leaf-edge roller on *Salix pentandra* L.

- †*Pontania collectanea* (Foerst.) Malham Tarn Fen (64), galls on *Salix repens* L., 1954 (C. Sinker); 1♂ on *S. repens*, 1/6/55, R.B.B.
- **P. bridgmanii* (Cam.) Malham Tarn Fen (64), galls on *Salix atrocinerea* Brot., 5-6/55, R.B.B.
- †*P. coriacea* Benson (*Ent. mon. Mag.*, **89**, 1953, 150). Malham Tarn Fen (64), 1-6/6/55, 1♂, R.B.B. A leaf-edge roller on *Salix* spp.
- †*P. tuberculata* Benson (*Ent. mon. Mag.*, **89**, 1953, 150) Malham Tarn Fen (64), 1♂, 1♀, R.B.B. (*Ent. mon. Mag.*, **92**, 1956, 166). Found in Scotland and Wales, but not previously in England.
- **Dineura stilata* (Klug) Malham Tarn Fen (64), 18/6/54, 1♂, W.D.H. (R.B.B.).
- †*Pteronidea similator* (Foerst.) Malham Tarn Fen (64), 27-31/5/55, 3♀, R.B.B. (*Ent. mon. Mag.*, **92**, 1956, 166). First English record. Hitherto only in Scotland. Probably feeds on *Salix repens*.
- †*P. curtispina* (Thoms.) Malham Tarn Fen (64), 27-31/5/55, 1♂, 1♀, R.B.B.
- **P. ferruginea* (Foerst.) Malham Tarn Fen (64), 1-6/6/55, 2♂, R.B.B.
- **P. nigricornis* (Lep.) Malham Tarn Fen (64), 2/6/55, 1♂, R.B.B.
- **Amauronematus crispus* Benson (*vittatus* auctt. Brit. nec Lep.) Malham Tarn Fen (64), 5/6/55, 1♀, R.B.B.
- †*Pachynematus calcicola* Benson (*Ent. mon. Mag.*, **84**, 1948, 63) Pen-y-ghent (64), 5/1933 (♂ holotype, F.W.E. and W.H.T.T.); top of Moughton 1♂ and Juniper Valley 1♂, 5/1933, F.W.E. and W.H.T.T. (R.B.B.).
- **P. vagus* (F.) Malham Tarn Fen (64), 27-31/5/55, 1♂, 1♀, R.B.B. This is only the second male Mr. Benson has seen of this common parthenogenetic species.
- **P. diaphanus* (Evers.) Malham Tarn Fen (64), 27-31/5/55, R.B.B.; 13/8/55, Spiggot Hill Fen, 20/8/55, W.D.H. (R.B.B.).
- †*Pristiphora fulvipes* (Fall.) Malham Tarn Fen (64), 12/8/55, 1♀, W.D.H. (R.B.B.).
- †*P. breadalbanensis* (Cam.) (see Benson, *Ent. mon. Mag.*, **89**, 1953, 152). Moughton (64), 6/33, 1♂, F.W.E. and W.H.T.T. (R.B.B.); Fountains Fell (64), 18/6/54, 1♂, W.D.H. (R.B.B.), 1,500-2,000 ft. 28/5/55, 4♂, R.B.B.
- †*P. mollis* (Htg.) Fountains Fell (64), 1♂, 1♀ on *Vaccinium myrtillus* L., 1,500-2,000 ft., 28/5/55, R.B.B.; Pen-y-ghent (64), 6♂, 4♀ on *V. myrtillus*, 30/5/55, R.B.B.
- **P. quercus* (Htg.) Pen-y-ghent (64), 1♂, 1♀ on *V. myrtillus*, c. 2,000 ft., 30/5/55, R.B.B.; Colt Park, Selside (64), 1♂, 9/6/55, R.B.B.

BRACONIDAE

- **Spathius exarator* (L.) Thornton-le-dale (62), 30/6/56, 1♂, D. Walker (W.D.H.) (*The Naturalist*, 1956, 148).
- **Agathis clausthaliana* (Ratz.) Gundale, Newtondale (62), 30/6-1/7/56, W.D.H. (*The Naturalist*, 1956, 149).
- **Eubadizon extensor* (L.) Newtondale (62), 1/7/56, 1♀, W.D.H. (*The Naturalist*, 1956, 149).
- †*Syntretus vernalis* (Wesm.) Helmsley (62), 13-17/6/49, 1♀, W.D.H.
- **Pentapleura pumilio* (Nees) Malham Tarn Fen (64), 13/8/55, 1♀, W.D.H.
- **Dacnusa petiolata* (Nees) Newtondale (62), 1/7/56, 1♂, W.D.H. (*The Naturalist*, 1956, 149).

APHIDIIDAE

- †*Ephedrus validus* (Hal.) Malham Tarn Fen (64), 13/8/55, 1♂, 2♀, W.D.H.
- **Monoclonus caricis* (Hal.) Malham Tarn Fen (64), 18/6/54, 1♀, W.D.H.
- **Trioxys auctus* (Hal.) Malham Tarn Fen (64), 18/6/54, 1♀, W.D.H.
- †*T. brevicornis* (Hal.) Malham Tarn Fen (64), 15/8/55, W.D.H.
- †*T. pallidus* (Hal.) Malham Tarn Fen (64), 13/8/55, Tarn House Plantation, 14/8/55, W.D.H.
- †*T. letifer* (Hal.) Malham Tarn Fen (64), 13/8/55, 1♀, W.D.H.
- **Praon abjectum* (Hal.) Malham Tarn Fen (64), 12-13/8/55, common, W.D.H.
- **Aphidius ephippium* Hal. Malham Tarn Fen (64), 24/7/56, 1♀, on lichen-covered alder trunk, W.D.H.
- **A. avenae* Hal. Malham Tarn Fen (64), 12-13/8/55, abundant, W.D.H.
- **A. granarius* Mshl. Malham Tarn Fen (64), 12/8/55, 1♀, W.D.H.
- †*A. pterocommae* Mshl. Malham Tarn House Plantation (64), 14/8/55, W.D.H.
- †*A. dissolutus* Hal. Malham Tarn Fen (64), 13-15/8/55, W.D.H.

- †*Aphidius salicis* Hal. Malham Tarn Fen (64), 13/8/55, 1♀, W.D.H.
 †*A. pseudoplatani* Mshl. Malham Tarn House Plantation (64), 16/8/55, W.D.H.

ICHNEUMONIDAE

- **Agrothereutes migrator* (F.) Gundale (62), 30/6/56, 1♀, W.D.H. (*The Naturalist*, 1956, 149).
 **Lampronota catenator* (Panz.) Gundale, Newtondale (62), 30/6-1/7/56, W.D.H. (*The Naturalist*, 1956, 149).
 **Pion* (*Catoglyptus*) *crassipes* (Holmgr.) Gundale, Newtondale (62), 30/6-1/7/56, W.D.H. (*The Naturalist*, 1956, 149).
 †*Eustiphrosomus antilope* (Grav.) Newtondale (62), 1/7/56, 1♀, W.D.H. (*The Naturalist*, 1956, 149).
 **Diplazon annulatus* (Grav.) Newtondale (62), 1/7/56, W.D.H. (*The Naturalist*, 1956, 149).
 **D. biguttatus* (Grav.) Newtondale (62), 1/7/56, W.D.H. (*The Naturalist*, 1956, 149).
 **Casinaria vidua* (Grav.) Leeds, Oakwood (64), 6/1949, parasiting larvae of *Abraxas grossulariata* (L.) on gooseberry, W.D.H.

CYNIPIDAE

- **Trigonaspis megaptera* (Panz.) Gundale, Howldale (62), 30/6/56, galls on oak. Adults emerged 7/56, W.D.H. (*The Naturalist*, 1956, 149).
 **Andricus quercus-corticis* (L.) Howldale (62), a few galls on oak-trunks, 30/6/56, W.D.H. (*The Naturalist*, 1956, 150).
 †*Callirhytis glandium* (Gir.) Gundale (62), 30/6/56, one old gall on oak, W.D.H. (*The Naturalist*, 1956, 150).

CHALCIDOIDEA

- †*Cryptopristus caliginosus* (Walk.) Spurn (61), Saltings, 15/7/52, 1♀, S.S. (R.D.E.).
 †*Homalotyloidea dahlbomii* (Westw.) Spurn (61), South Lane, 21, 22/7/53, W.D.H., S.S. (G.J.K.) (see Kerrich, 1956, *Ann. Mag. nat. Hist.* (12) **9**, 106-7).
 †*Encyrtus belibus* Walk. Spurn (61), Salt Marsh, 1♀, 18/6/47, W.D.H. (R.D.E.). This species has not been rediscovered since its original description in 1837. It does not belong to the genus *Encyrtus* in its modern sense.
 †*Platymesopus tibialis* Westw. Malham Tarn House Plantation (64), 14/8/55, W.D.H.
 †*Cryptogaster rufipes* Walk. Malham Tarn Fen (64), 15, 19/8/55; Spiggot Hill Fen, 15/8/55, W.D.H.
 **Aphelinus tibialis* (Nees) Malham Tarn Fen (64), 15/8/55, 1♀, W.D.H.
 †*Anagrus atomus incarnatus* Hal. (see P. E. S. Whalley, 1956, *Ent. mon. Mag.*, **92**, 147). Malham Tarn Fen (64), 15/8/55, W.D.H.
 †*Patasson lameerei* Debauche Leeds, Lime Hills (64), 4/5/46, 3♀, W.D.H. Lastingham (*62), 14/6/49, 2♀, W.D.H.
 †*Lymaenon ater* (Foerst.) Allerthorpe Common (61), 12/9/50, 1♀, sweeping, W.D.H.
 †*L. tremulae* Bakkendorf Askham Bog (64), 27/5/47, 1♀; Skipwith (*61), 29/9/48, 1♀; Allerthorpe (61), 1/9/53, 1♀, W.D.H. The above three additions to the British List will be treated in more detail in a forthcoming paper.

HELORIDAE

- †*Helorus coruscus* Hal. Askham Bog (64), 11/6/54, W.D.H. (S.S.).

ACULEATA

- **Chrysis cyanea* (L.) Gundale (62), 30/6/56, in burrows in an old post. W.D.H. (*The Naturalist*, 1956, 149).
 **Sapyga clavicornis* (L.) Gundale (62), 30/6/56, in burrows in an old post, W.D.H. (*The Naturalist*, 1956, 149). Only previously recorded from Wakefield in 1852 (*The Naturalist*, 1930, 365).
 **Prosopis communis* Nyl. Newtondale (62), 1/7/56, W.D.H. (*The Naturalist*, 1956, 149).

Diptera (K. G. Payne): The report below mainly comprises additions to the county and vice-county lists. It is compiled from the work of Mr. H. M. Russell, Dr.

B. R. Laurence, Dr. W. D. Hincks and the writer. Dr. Laurence's records are contained in a most interesting paper on 'The Empididae (Diptera) of a Yorkshire Stream' (*Ent. mon. Mag.*, **91**, 220-224, 1955). This is a study of Empididae and their prey carried out on Colburn Beck, near Richmond, V.C. 65. Yorkshire records of the Acalyptrate family Sciomyzidae have been collected and published by Mr. Russell.

Regarding this year's work, Mr. Russell writes: In spite of the continued outbreaks of torrential rain throughout the summer months a considerable amount of material has been collected. An estimate of the number of species taken being in the region of 300. The major part of this material remains to be worked out during the winter months and a further list will be prepared in due course.

The Agromyzidae appears to have thrived on the wet conditions and I have never been short of material to rear. However, the Agromyzidae have not been the only insects to appreciate the wet conditions for I have found that quite 75 per cent. of my Agromyzid material has been subjected to the attentions of the Parasitica.

Mr. Russell's records, including three species of Psychodidae and three of Medeterus (Dolichopodidae), new to Yorkshire, are included below.

The writer has had little chance of carrying out intensive work on any particular group or aspect during the year. His records, included below, result mainly from brief periods of sweeping and collecting from aerial swarms during the Union's field meetings and elsewhere. There appear below 29 additions to the Yorkshire list and 47 additions to those of the vice-counties. Where not otherwise stated the records are those of the writer. It is a pleasure to record thanks to Mr. J. E. Collin for determinations or confirmations in the cases where his name is mentioned.

TIPULIDAE

Tipula staegeri Nielsen (*62). Strensall Common, 23/9/56.

Dicranomyia stigmatica (Mg.) (*65). Waldondale, boggy banks of a fast stream at 1,400 O.D., 1/9/56. Previous Yorkshire records are from Ilkley and Harrogate, but it appears to be mainly a mountain bog species.

Pedicia (Amalopsis) occulta (Mg.) (65). Same locality and date as the last. Previously only taken in Yorkshire at Whernside and Cautley Spout, it seems safe to suggest that the species in Yorkshire is not 'rather common, generally distributed', as given by Coe. The late C. A. Cheetham would have recorded a conspicuous species like this; more than twice had he found it frequently. It is the first time the writer has taken it.

Dicranota guerini Zett. (62). A single female taken 10/6/51 on Eller Beck, by Goathland railway station, is very probably this species. This is one of the species first added to the British list by C. A. Cheetham, at Austwick.

Limnophila (Elaeophila) submarmorata Verrall (*65). Richmond, Whitcliffe Wood, 16/6/56.

Limnophila (Idioptera) pulchella (Mg.) (*62). Strensall Common, 23/9/56. A frequent species of boggy woods.

Erioptera (Ilisia) occoecata (Edw.) (*65). Richmond, Whitcliffe Wood, 16/6/56.

E. (I.) areolata Siebke (*61). Moreby Park, Naburn, riverside, 16/9/56.

PSYCHODIDAE

Pericoma fusca (Mcq.) (64). Templenewsam Woods, 12/6/56; H. M. Russell.

†*P. pilularia* Tonn. (64). } Templenewsam Woods, 1/10/56; H. M. Russell.
P. canescens (Mg.) (64). }

†*Psychoda gemina* Eaton (64) }
P. albipennis Tonn. (*64) } Templenewsam Woods, 10/7/56; H. M. Russell.
P. phalaenoides (L.) (*64) }
 †*P. setigera* Tonn. (64) }

CULICIDAE

Dixa nubilipennis Curtis (*62). Goathland, by West Beck, near Mallyan Spout, 8/9/56.

†*Chaoborus flavicans* (Mg.) (62). Pond Head, Yearsley, 26/8/56.

CHIRONOMIDAE

The following nine Chironomidae species are probably all common and widely distributed:

- Pentaneura lentiginosa* (Fries) (*65)
P. carnea (Fabr.) (*65)
P. pallidula (Mg.) (*65)
- } Richmond, Whitcliffe Wood, 16/6/56.
- †*P. hirtimana* (Kieff.) (61). Howsham Bridge, on River Derwent, 7/10/56.
Anatopynia punctata (Fabr.) (*62). Strensall Common, 23/9/56.
A. nebulosa (Mg.) (*62). Goathland, Eller Beck, 8/9/56.
Procladius choreus (Mg.) (*62). Pond Head, Yearsley, 26/8/56.
 †*Pentapedilum* (*Phaenopsectra*) *flavipes* (Mg.) (61). Howsham Bridge, on River Derwent, 7/10/56.
Chironomus (*Polypedium*) *lactus* (Mg.) (*65). Richmond, Whitcliffe Wood, 16/6/56.

CERATOPOGONIDAE

- †*Forcipomyia bipunctata* (L.) (64). Copmanthorpe, on outside of lighted house windows at night, 25/9/56.
 †*Culicoides circumscriptus* Kieff. (64). Copmanthorpe, as the last species, 25/9/56. Though only a single female was taken, there seems no doubt of its specific identity. Edwards, Oldroyd and Smart (1939) give this as essentially a coastal species but mention that 'In addition a female specimen (doubtless a straggler) was taken on a window in the Natural History Museum, South Kensington.'
C. obsoletus (Mg.) (*61). Moreby Park, Naburn, river side, 14/10/56. This species is common in my garden in Copmanthorpe.
 Biting midges (species undertermined) were still a nuisance in my garden and in a wood near Bramham on the 3rd and 4th November.

MYCETOPHILIDAE

- Macrocera vittata* Mg. (*62). Staintondale, Pickering, by Dalby Beck, 1/7/56. (*65). Richmond, Whitcliffe Wood, 16/6/56.

STRATIOMYIDAE

- Chorisops tibialis* (Mg.) (*64). Barlow, banks of River Ouse, 6/8/45; Dr. W. D. Hincks.
Oxycera morrisii Curtis (*62). Runswick Bay, 6/28; Dr. W. D. Hincks.

RHAGIONIDAE

- †*Ptiolina obscura* (Fln.) (65). Richmond, numerous larvae taken from under moss on stones (scree) and tree trunks along the River Swale. Adults emerged 14/6/56 and 18/6/56. Larvae taken during Easter holidays 1956. Dr. B. R. Laurence, London School of Hygiene and Tropical Medicine (per H. M. Russell).

ASILIDAE

- Lasiopogon cinctus* (Fabr.) (62). Strensall Common, 10/6/56, about peaty pools and ditches. This is a heathland species previously recorded from V.C. 61, and Scarborough and Pilmoor in V.C. 62.

EMPIDIDAE

- Tachypeza nubila* Mg. (*65). Richmond, Colburn Beck, May-June, 1954; Dr. B. R. Laurence.
Tachydromia annulimana (Mg.) (*65)
Platypalus longicornis (Mg.) (*65)
P. agilis (Mg.) (*65)
- } Data as for last species.
- †*Bicellaria sulcata* (Ztt.) (65)
Trichina clavipes Mg. (*65). Waldondale, boggy edge of fast stream at 1,400 ft. O.D., 1/9/56.
Microphorus holosericeus (Mg.) (*65). Richmond, Colburn Beck, May-June, 1954; Dr. B. R. Laurence.
 †*Gloma fuscipennis* Mg. (65). Data as for last species.

- † *Hilara brevistyla* Collin (65). Richmond, Colburn Beck, May-June, 1954; Dr. B. R. Laurence.
- Empis* (*Pachymeria*) *picipes* Mg. (*63). Wentbridge, Brocodale, near stream, 2/6/56.
- E.* (*Emphis*) *rufiventris* Mg. (*63). Data as for last species.
- † *E.* (*Coptophlebia*) *albinervis* Mg. (62). (Det. J. E. Collin). Pond Head, Yearsley, 18/7/53.
- E.* (*C.*) *vitripennis* Mg. (*62). Eller Beck, Goathland, 8/9/56.
- E.* (*Xanthempis*) *punctata* Mg. (*65). Richmond, Colburn Beck, May-June, 1954; Dr. B. R. Laurence.
- Rhamphomyia* (*Lundstroemiella*) *hybotina* Ztt. (64) (Det. J. E. Collin). Fountains Fell Tarn (c.1, 950 ft. O.D.), Malham. A number of specimens were taken off the surface of the tarn, on which they probably were numerous. While species of Clinocerinae are found regularly on the surface of water, this is the only time the writer has come across one of the Empidinae on water. Mr. Collin (*in litt.*) says that the occurrence of this species on the water surface was not known to him.
- R.* (*Holoclera*) *nigripennis* (Fabr.) (*65). Richmond, Colburn Beck, May-June, 1954, Dr. B. R. Laurence.
- R.* (*Pararhamphomyia*) *barbata* (Mcq.) (*65). Data as for last species.
- R.* (*Amydroneura*) *erythrophthalma* Mg. (*62). Goathland, Eller Beck, 8/9/56. (*64) (Det. J. E. Collin). York, Knavesmire Wood, 5/9/53.
- R.* (*Aclonempis*) *albohirta* Collin (*65). Richmond, Colburn Beck, May-June, 1954; Dr. B. R. Laurence.
- † *R.* (*A.*) *longipes* (Mg.) (64) (Det. J. E. Collin). Colton Hagg Wood (near York), on the flowers of *Ranunculus repens*, 20/6/52.
- † *Chelifera aperticauda* Collin (65). Richmond, Colburn Beck, May-June, 1954; Dr. B. R. Laurence.
- † *Clinocera* (*Kowarzia*) *bipunctata* (Hal.) (64) (Det. J. E. Collin). Malham, 'flush' in dry valley above the Cove, 7/8/52. (*62). Staithes, on cliff, 5 ft. above shore, 1/6/52; Scaling Mill, Loftus, 2/6/52. (*61). Filey, the 'Ravine', 19/9/53. In the case of each of the above records the flies were taken where shallow water was running down a steep face—hygroscopic habitats.

DOLICHOPODIDAE

- † *Medeterus tristis* (Ztt.) (64). Scarcroft, near Leeds, 2/6/56; H. M. Russell.
- † *M. impiger* Collin (64) } Far Tarn Fen, Malham, 26/7/56; H. M. Russell.
- † *M. muralis* Mg. (64) }
- † *Rhaphium longicorne* Flin. (64). Tarn Fen, Malham, 23/7/56; H. M. Russell.

LONCHOPTERIDAE

- Lonchoptera tristis* Mg. (*64). Harewood Park, 7/10/56; H. M. Russell.

PLATYPEZIDAE

- † *Microsania pectinipennis* (Mg.) (62). Pickering, Gundale, sweeping at the edge of the wood by the quarry rail track, 29/6/56. This species is credited with the extraordinary habit of swarming in the neighbourhood of bonfires and heath fires, as mentioned by Colyer and Hammond.

OTITIDAE

- Otitus guttata* (Mg.) (*63). Wentbridge, Brocodale, plentiful about nettle beds by the stream, 2/6/56.
- † *Herina palustris* (Mg.) (62) (teste J. E. Collin). Pond Head, Yearsley, 18/7/53.

EPHYDRIDAE

- Seoptera vibrans* L. (64). Ulleskelf, 22/5/56; H. M. Russell.
- † *Philygria strictia* (Mg.) (62). Pickering, Gundale, sweeping at the edge of the wood by the quarry rail track, 29/6/56.

SPHAEROCERIDAE

- Borborus ater* Mg. (*65). Summit of East Baugh Fell, sweeping among peat hags at above 2,150 ft. O.D., 3/10/53.
- †*Borborillus costalis* (Ztt.) (61). Sutton-on-Derwent, by river, cow dung, 15/9/56.
- Collinellula lutosa* (Stenh.) (*61). Heslington, York, sweeping banks of a roadside ditch, 15/4/56.
- †*Paracollinella curvinervis* (Stenh.) (64). Appleton Roebuck, sweeping roadside ditch, 2/4/56.
- Pteremis nivalis* (Hal.) This species was recorded in the annual report for 1955. It should be noted that Mr. Collin considers that the species is a mutant form of *Stenhammaria fenestralis* Flin. (*J. Soc. Brit. Ent.*, 5, 178). The record should therefore be referred to the latter species.
- †*Opacifrons coxata* (Stenh.) (62). New Earswick, York. Sweeping banks of River Foss and mud at edge of water, 20/4/56.
- Chaetopodella scutellaris* (Hal.) (*65). Richmond, on sheep dung, 16/6/56.
- Limosina vitripennis* Ztt. (64) (Det. J. E. Collin). Queen Mary's Dubb, Ripon, 25/6/55. Though previously recorded from Austwick, it seems well to mention this specimen owing to earlier doubts about synonymy (J. E. Collin, 1956, 'Some New British Borboridae,' *J. Soc. Brit. Ent.*, 5, 172-178).
- †*L. v-atrum* (Villeneuve) (62) (Det. J. E. Collin). Mulgrave Woods, Sandsend, sweeping, 30/5/55. This species has been little taken. Richards (1930) knew of one British specimen in the Wood Collection and from Herefordshire. Mr. Collin has taken it once, in the New Forest, and Duda (1938) had apparently taken it twice in Germany.
- †*L. palmata* Richards (61) (Det. J. E. Collin). Skipwith Common, on rotten *Lactarius turpis*, under birch, 17/9/55.
- †*Trachypella atomus* (Rond.) (64). Copmanthorpe, in windows of house, 22/9/56. Richards (1930) had seen 8 specimens and mentions that his records were from windows. Its very small size may lead to its being overlooked in other situations.
- Coprophila acutangula* (Zett.) (*65). Richmond, on sheep dung, 16/6/56.
- C. ferruginata* Stenh. (*65). Data, as for last species.

DIASTATIDAE

- Diastata inornata* Lw. (*62). Goathland, by West Beck, near Mallyan Spout, 8/9/56. (*65). Waldondale, boggy ground by fast stream at 1,400 ft. O.D., 1/9/56.

CORDILURIDAE

- Trichopalpus fraternus* (Mg.) (*61). Hunmanby Gap, on the surface of a pool of water in a hollow of the sea cliffs, 7/9/51.

MUSCIDAE

- Dasyphora cyanella* (Mg.) (64). Bolton Percy. Two live flies in a previous year's blackbird nest, 6 ft. up in a hedge, 18/3/56.

Plant Galls (E. F. Gilmour): As in other fields of Entomology the persistently bad weather in 1956 has cut down Plant Gall collecting to a great extent. As in previous years, special thanks are due to Miss C. M. Rob, F.L.S., for so regularly sending material to me. Only a selective list from those found is given here.

	Agent	Plant
HYMENOPTERA	<i>Neuroterus quercus baccarum</i> (65), Applegarth, Richmond, 16/6/56. C.M.R.	<i>Quercus petraea</i> (Matt.) Liebl.
	<i>Liposthenus latreillei</i> (Kieffer) (65), Applegarth, Richmond, 16/6/56. C.M.R.	<i>Glechoma hederacea</i> (L.) Trev.
	<i>Andricus quercus ramuli</i> (Linn) (65), Magdalene Woods, West Tanfield, 30/5/56. C.M.R.	<i>Quercus petraea</i> (Matt.) Liebl.

HYMENOPTERA (cont.)	<i>Pontania salicis</i> (Linn) (64), West Tanfield, 29/6/56. C.M.R.	<i>Salix purpurea</i> Linn.
	<i>Cynips divisia</i> Hartig. (65), Nosterfield, 26/9/56. C.M.R.	<i>Quercus robur</i> Linn.
DIPTERA	<i>Rhabdophaga salicis</i> (Schränk) (64), West Tanfield, 26/9/56. C.M.R.	<i>Salix purpurea</i> Linn.
	<i>Geocrysta galli</i> (Loew) (65), Applegarth, Richmond, 16/6/56. C.M.R.	<i>Galium verum</i> Linn.
	<i>Rhopalomyia ptarmicae</i> (Vallot) (62), Egton Moor (between Whitby and Guisborough), 26/6/56. C.M.R.	<i>Achillea ptarmica</i> Linn.
	<i>R. tanaceticola</i> (Karsch) (62), Topcliffe Mill, 23/6/52. C.M.R.	<i>Tanacetum vulgare</i> Linn.
	<i>Dasyneura sisymbrii</i> (Schränk) (62), Topcliffe Mill, 23/6/52. C.M.R.	<i>Barbarea vulgaris</i> R. Br.
HOMOPTERA	<i>Rhopalosiphum padi</i> (Linn.) (65), Cover Bridge, Middleham, 1/6/56. C.M.R.	<i>Prunus spinosa</i> Linn.
	<i>R. padi</i> (Linn.) (64), Spa Gill, Grantley, 21/5/56. C.M.R. (65) Magdalene Woods, West Tanfield, 30/5/56. C.M.R.	<i>Prunus padus</i> Linn.
ACARI	<i>Eriosoma ulmi</i> (64), Spa Gill, Grantley, 21/5/56. C.M.R.	<i>Ulmus glabra</i> Huds.
	<i>Rhytophis laevis</i> (64), Spa Gill, Grantley, 21/5/56. C.M.R.	<i>Alnus glutinosa</i> (L.) Gaertn.
	<i>Eriophyes thomasi</i> Nalepa (65), Applegarth, Richmond, 16/6/56. C.M.R.	<i>Thymus drucei</i> Ronn.
	<i>E. tiliae</i> Nalepa (65), Catton, 30/8/56. C.M.R.	<i>Tilia vulgaris</i> Hayne.
	<i>E. origani</i> Nalepa. (65), Nosterfield, 26/9/56. C.M.R.	<i>Origarum vulgare</i> Linn.
FUNGI	<i>Melampsora cerastii</i> Person. (62), Catton, 28/6/56. C.M.R.	<i>Abies alba</i> Mill.
	<i>Puccinia aegopodii</i> Schum. (65), Catton, 30/8/56. C.M.R.	<i>Aegopodium podagraria</i> Linn.
	<i>Ustilago utriculosa</i> Nees. (62), Catton, 28/6/56. C.M.R.	<i>Polygonum convolvulus</i> Linn.

BOTANY

(Miss C. M. Rob): Reports on the effects of the past summer with its extremes of weather have come in from all parts of the county and all contributors agree that it has been one of the worst on record. The very cold dry spring retarded the early vegetation and everything was about a month behind normal, but when the plants eventually did flower the bloom was well above average especially in primroses, cowslips and bluebells.

After the weather broke, the remainder of the summer was both wet and cold with strong winds often reaching gale force. Throughout the county reports of the exceptional flowering of trees and in particular of beech, are general, and there are heavy crops of 'mast' which is about 75% full in the Thirsk district, though in the Harrogate area it is given as not good. Horse chestnuts are small and several contributors of notes tell of the large percentage of blind nuts. The strong winds have done considerable damage, many trees have been uprooted or damaged, the later gales almost defoliated trees in several districts and there was much secondary growth in most places. Fruit was scarred and damaged by wind and rain.

Grass crops have been good but in the Richmond district haytime was so late that the meadow colchicum was in flower before the meadows were cut, an unheard of happening. There were still fields of hay in September and near Thirsk some hay was lead in October. Grasses as a whole had a prolonged flowering period, many are still in flower on October 20th. Corn crops suffered badly from the effects of wind

and rain, many fields were so badly laid that it has not been possible to cut them, those that stood up were beheaded by the strong wind, and in some cases less than one third of the crop has been harvested. Much that was gathered had sprouted. Crab-apple, birch and hawthorn flowered well and the crop of fruit is good, especially the hawthorn. Bird-cherry flowered well and has suffered less than usual from the ravages of the small ermine moth. Oak has fruited badly in most places and only from Pickering do we get a report of a good crop of acorns. Brambles are late and small. Bilberry is good, especially in the Scarborough area and from Harrogate comes a report of an exceptional crop of cowberry (*Vaccinium vitis-idaea*). Black-thorn was very late and was in flower at the same time as hawthorn in several parts of the county.

The abnormally wet season has made it impossible to assess the effects of myxomatosis—the heavy grass crops may be due in some measure to the absence of rabbits but further observations are necessary before any conclusions can be drawn. While the rabbit population has become very much smaller there are still some left in most places, and it is hoped that particular note will be kept throughout the county during the next few years of the status of the rabbit and of its effects on the vegetation.

Some plants have flowered well. *Ledum groenlandicum* has increased considerably in the Bingley district. *Saxifraga hirculus* was in good flower in late September in the well-known Baldersdale station. Orchids have been very patchy; in some districts they have had a good year while in others there has been a very poor show. In the Helmsley district the bee orchid flowered very well and the frog was in flower in mid-August. At Linton, *Orobancha reticulata* is threatened by digging operations, while at Ripon the plant flowered well and seems to be increasing. *Gagea lutea* flowered exceptionally well as did *Lathraea squamaria* (Toothwort).

Gentiana pneumonanthe (Marsh Gentian) near Pickering is in danger from the planting of trees. Representations have been made to the Forestry Commission and it is hoped they will take steps to safeguard the plant in this locality.

The absence of frost has prolonged the flowering period of all plants and in late October there is still a fine show in many gardens, and many of the wild plants are still in bloom.

Plant Records (Miss C. M. Rob): In spite of the poor summer a very good list of plant records has come in. All records which do not appear are being filed, and these will be available to anyone working on particular groups or localities.

Records of plants noted on the field meetings of the Union are not included as these have already been printed in *The Naturalist*. The use of the Botanical Society's mapping cards appeared to stimulate the section to a most gratifying burst of activity. Miss Crackles and Professor Good have done some hard work in the East Riding, an area which has had little attention for some years. Professor Good re-discovered *Cladium mariscus* near Beverley, and has sent a long list of new stations for many of the rarer plants and confirmations of existing records. In the Sheffield district *Trientalis europaea* has been found by Miss Shaw. Dr. Piggott, who sent the record, considers the plant to be of fairly recent occurrence in this locality.

Two new stations for the drawf cornel are reported, both about a mile and a half from the well-known Hole of Horcum locality, one to the east, the other to the west. Mr. Adam Gordon has found about a dozen plants of *Cirsium acaule* in Duncombe Park, over a mile from the Harriet Aire station. The Duncombe Park plants are in an area of rough grassland which was very much cut up by tanks during the last war.

Some other interesting records include:

Ceterach officinarum DC. (65). Near Richmond; Mrs. J. Payne.
Dryopteris spinulosa (Mull.) Watt (63). Hardcastle Crags; F. Murgatroyd.
Thelypteris oreopteris (Ehrh.) C. Chr. (61). Langwith Common; Miss E. Crackles.
Botrychium lunaria (L.) Sw. (63). Wentbridge; Ackworth School.
Helleborus foetidus L. (61). Fangfoss; Mrs. M. Thompson.
Dianthus deltoides L. (61). Scampston; R. D'O. Good.
Astragalus glycyphyllos L. (64). Stutton, near Tadcaster; E. Thompson.
Agrimonia odorata (Gouan) Mill. (64). Hackfall; G. A. Shaw.
Epilobium adnatum Gris. (61). Langwith Common; Miss E. Crackles. (63). Blackburn Valley, Halifax; F. Murgatroyd.

- Chamaepericlymenum suecicum* (L.) Aschers. & Graebn. (62). Newtondale; R. Bartlett; near Saltersgate; Rev. P. Garnett.
- Rumex longifolius* DC. (63). Near Causewayfoot; F. Murgatroyd.
- × *Vaccinium intermedium* Ruthe. (63). Norland Edge; F. Murgatroyd.
- Pyrola minor* L. (64). Harlow Car; G. A. Shaw, Miss D. Walker.
- Anagallis foemina* (Mill.) Schinz & Thell. (62). Sandy ground near Sproxton Old Mill, Duncombe Park; A. Gordon.
- Trientalis europaea* L. (62). Kildale; Darlington Naturalists, per T. Scaling. (63). Ringinglow, near Sheffield; Miss Shaw per Dr. Piggott.
- Kickxia elatine* (L.) Dum. (61). Brantingham; R. D'O. Good.
- Melampyrum pratense* L. (61). Near Kexby; R. D'O. Good.
- Orobanche elatior* Sutton (61). South Cave; Mrs. Grewe, per Miss E. Crackles.
- O. minor* Sm. (64). Clover field near Boston Spa; E. F. Bransdon.
- × *Stachys ambigua* Sm. (63). Canal bank, Luddendenfoot; F. Murgatroyd. Clifton, near Brighouse; Halifax Naturalists.
- Galium mollugo* L. × *G. verum* L. (× *G. ochroleucum* Syme) (61). Waterdale; W. A. Sledge. (64). Railway banks, Settle; J. N. Frankland.
- Cirsium acaule* (L.) Scop. (61). Winteringham; R. D'O. Good. (62). Duncombe Park; A. Gordon.
- Hypochaeris glabra* L. (61). Scampston; R. D'O. Good.
- Tragopogon porrifolius* L. × *T. pratensis* L. (62). Duncombe Park; A. Gordon.
- Hydrocharis morsus-ranae* L. (61). Howden area; R. D'O. Good.
- Allium oleraceum* L. (65). Nossill Scars, near Aysgarth; G. A. Shaw.
- Allium vineale* L. (64). Roadside between Spofforth and Ribston; Miss D. Walker; near Pool-in-Wharfedale; Mrs. F. Houseman.
- Iris foetidissima* L. (61). Ganton; R. D'O. Good. ? Native or introduced.
- Orchis fuchsii* Druce × *O. purpurella* T. & T. A. Steph. (62). Uppang; Miss C. M. Rob.
- O. purpurella* T. & T. A. Steph. (62). Uppang; Miss C. M. Rob.
- Cladium mariscus* (L.) Pohl (61). Near Beverley; R. D'O. Good.
- Carex contigua* Hoppe (64). Malham; G. A. Shaw.
- C. hostiana* DC. × *C. lepidocarpa* Tausch. (64). Malham Tarn; G. A. Shaw.
- C. pallescens* L. (61). Birkhill Wood, plentiful; Miss E. Crackles.
- Glyceria fluitans* (L.) R. Br. × *G. plicata* Fr. (61). Pulfen Bog; Miss E. Crackles.
- Vulpia bromoides* (L.) S. F. Gray (61). Wall at Ryehill; railway siding Willerby; Miss E. Crackles.
- Bromus commutatus* Schrad. (61). Between Burstwick and Kelsey Hill; Miss E. Crackles.
- B. lepidus* Holmberg (61). North Cave; Market Weighton; Miss E. Crackles.
- B. thominii* Hard. (61). North Cave; Miss E. Crackles.

ALIENS AND CASUALS

- Ranunculus arvensis* L. (64). Ellar Ghyll, Otley; Wescoe Hill, Huby; Mrs. F. Houseman.
- Lepidium smithii* Hook. (61). Near Beverley; R. D'O. Good.
- Diplotaxis muralis* (L.) DC. (64). Guiseley; Mrs. M. Hartley.
- Cardaria draba* (L.) Desv. (64). Addingham; Mrs. M. Hartley. (63). Near Apperley Bridge; Miss N. Hutchinson, per A. Malins Smith.
- Coronopus didymus* (L.) Sm. (64). Settle; J. N. Frankland.
- Claytonia perfoliata* Willd. (61). Withernsea, common; C. Porter, Miss E. Crackles.
- Epilobium pedunculare* A. Cunningham (64). Hackfall; G. A. Shaw.
- Euphorbia lathyris* L. (61). Fangfoss; Mrs. M. Thompson.
- Erinus alpinus* L. (62). Kirbymoorside; Rev. P. Garnett. (64). Gisburn Bridge and Bolton by Bowland; per Miss L. I. Scott.
- Melampyrum arvense* L. (61). Fangfoss; Mrs. M. Thompson.
- Mimulus moschatylus* Lindl. (65). Colsterdale.
- Veronica filiformis* Sm. (61). Riplingham Road, Hull; Mrs. Grewe, per Miss E. Crackles.
- Cicerbita macrophylla* (Willd.) Wallr. (61). Near Hewsham; Miss E. Crackles. (64). Pool in Wharfedale; Mrs. F. Houseman; Otley, Ben Rhydding and Ilkley; Mrs. M. Hartley.
- Galinsoga ciliata* (Rafn.) Blake (63). Templenewsam, common; R. F. Fitter.
- G. parviflora* Cav. (61). Sutton-on-Derwent; Mrs. M. Thompson.

Hieracium bruneocroceum Pugsf. (61). Near Escrick Park; Miss R. Ball. (64). Otley Chevin; Mrs. F. Houseman.
Allium triquetrum L. (64). Hedge near churchyard, Clifford, Boston Spa; Miss R. Kilby.

Bryology (G. A. Shaw): As was expected, the departure of Mrs. J. Appleyard has had a marked effect on the production of new records, and work has been almost confined to the two meetings held during the year at Bolton Abbey and Hackfall respectively.

At the Bolton Abbey meeting I requested that special search be made for bryophytes recorded from here in the past but not seen recently. Mr. A. Thompson later informed me that he had seen one of these (*Antitrichia curtipendula*) at Barden in 1941 and since.

There are two corrections to the 1955 report:

1. The moss recorded from Keyingham as *Brachythecium salebrosum* (Web. & Mohr) B. & S. is *B. glareosum* (Bruch) B. & S. with an unusual habit (det. E. F. Warburg).
2. The locality for *Bryum alpinum* With. var. *viride* Hum., is Cragg Vale, and not Hardcastle Craggs as stated.

The following are a few of the more interesting records:

Fissidens rufulus B. & S. (det. A. H. Norkett) abundant and fruiting freely at Hackfall, V.C. 64, on Y.N.U. excursion.

Eucladium verticillatum (With.) B. & S., fruiting on east bank of River Wharfe below Park Gill, Bolton Abbey, V.C. 64, on Y.N.U. excursion.

Schistostega pennata (Hedw.) Hook. & Tayl., still at Baildon Green, near Shipley; also in a new site in an old quarry at Hazel Head Wood, Baildon, V.C. 64; G. A. Shaw.

Thuidium philiberti Limpr., in short turf by roadside between Yockenthwaite and Deepdale, Upper Wharfedale, V.C. 64; G. A. Shaw.

Amblystegiella sprucei (Bruch) Loeske, Hackfall, V.C. 64, on Y.N.U. excursion.

Pylaisia polyantha (Hedw.) B. & S., fruiting on hedgerow trees near Aysgarth station, V.C. 65; G. A. Shaw.

I have had some correspondence with Professor Proskauer, of the University of California, in connection with his researches on the Anthocerotales. Apparently the type-specimen of *Anthoceros husnoti* is material gathered for Merrett at either Greenwood Lee, above Heptonstall, or at Middleton Tyas in the North Riding, and Professor Proskauer is most anxious to have living material from either of these localities. Correspondence with Mr. H. Walsh brought to light the fact that *Anthoceros* had also been recorded at High Greenwood in 1844 by Samuel Gibson. This was mentioned in a pamphlet by R. Howard, 1844, on 'An History of the Typhus at Heptonstall' in a supplement by S. Gibson. Another interesting item in the same pamphlet was a record of *Targionia hypophylla*, which has only two notices in our register, at Lumb Falls, near Lumb Mill, Heptonstall. Another reference to *Targionia*, also not in our register, is for a gathering in a quarry near Aberford in 1900 by Wm. Ingham, given in *N.W. Nat.*, 1942.

Apart from the above, the only records I have received are those contained in a list of common mosses collected at Burnsall by Mr. Allan Gibson, of Bradford.

Mycology (Miss J. Grainger): The Committee continues to be very active. The year has been good for the larger fungi, the high August rainfall and not too high temperature gave conditions which made for good baskets of specimens on the autumn foray.

The spring foray at Burnsall was well attended and the autumn foray at Richmond must surely provide a record, as thirty-one people sat down to dinner at Terrace House at the invitation of the Chairman. The British Mycological Society held their autumn field meeting with Sheffield as headquarters. It was ten years since the Society had met in Yorkshire. Members of the Yorkshire Committee were honoured by places at the top table at the formal dinner on Friday, September 7th.

At our own meeting at Richmond, the president of the British Mycological Society, and the President of the Union were present in addition to our own chairman. Dr. and Mrs. Astley-Cooper and Mr. P. D. Orton were also present. Mrs. Astley-Cooper designed the menu cards with their pictorial representations of bygone Yorkshire mycologists, and after dinner she gave us some interesting reminiscences

of her father, Carlton Rea. Afterwards we had the pleasure of seeing the paintings done by Mrs. Rea and Mrs. Astley-Cooper and one felt that the best part of Carlton Rea's 'Basidiomycetes' had never been published.

On Saturday, October 27th, a day foray, organised by Mr. Roy Watling, was held at Hebden Bridge. A report on this meeting will appear in due course.

YORKSHIRE NATURALISTS' UNION

INCOME AND EXPENDITURE ACCOUNT for the period ending 31st October, 1956

EXPENDITURE

	£	s.	d.	£	s.	d.
GENERAL PRINTING:						
Circulars	25	12	8			
Members' and Associates' Cards	68	3	2			
				93	15	10
"THE NATURALIST":						
Members' and Exchange Copies	275	19	11			
Cost of Extra Pages	51	12	7			
Editorial Expenses	4	0	0			
	331	12	6			
Less Contributions to cost of Extra pages	36	15	1			
				294	17	5
SUNDRY EXPENSES:						
Bank Charges	2	11	0			
Rent of Room	0	15	0			
Stationery, etc.	16	11	10			
New Recording System	10	7	2			
Officers' Expenses	17	18	11			
				48	3	11
SURPLUS INCOME OVER Expenditure				36	6	10
				£473	4	0

INCOME.

	£	s.	d.	£	s.	d.
Subscriptions received and due	430	7	5			
Sale of Mycological Papers—"Russula", etc.	10	6	9			
Sale of other Publications	3	7	8			
Income from Investments—General Fund	29	2	2			
				£473	4	0

BALANCE SHEET as at 31st October, 1956

LIABILITIES

	£	s.	d.	£	s.	d.
ACCUMULATED FUNDS—GENERAL PURPOSES:						
Booth Fund	100	0	0			
Cheeseman Fund	100	0	0			
Fowler-Jones Legacy (part)	250	0	0			
Life Members' Account	477	0	0			
	927	0	0			
Less Deficit Income and Expenditure Account <i>per contra</i>	237	19	11			
	689	0	1			
Add Surplus, period to 31st October, 1956	36	6	10			
	725	6	11			
NICHOLAS (ORNITHOLOGICAL FUND) MYCOLOGICAL FUND (R. C. Fowler-Jones Legacy):				100	0	0
Balance brought forward	170	3	10			
Grant towards "Cortinarius" Papers	50	0	0			
Sundry Donations	13	13	0			
Sale of Papers	33	0	5			
Interest on Deposit Account, 6 months	3	2	1			
	269	19	4			
Less Cost of "Cortinarius" Paper, Part I	239	16	6			
				30	2	10

ASSETS

	£	s.	d.	£	s.	d.
INVESTMENTS (Nominal Value):						
Booth Fund, 3½% Conversion Stock	100	0	0			
Cheeseman Fund, 3½% War Stock	100	0	0			
Nicholas Fund, 3% British Transport Stock	100	0	0			
General Fund, 4% Consols (Bank of England)	200	0	0			
General Fund, 4% Consols (Post Office)	159	10	11			
	659	10	11			
Less Reserve for Depreciation	175	0	0			
	484	10	11			
Deposit Account—Westminster Bank	269	5	4			
Current Account—Westminster Bank	97	8	6			
SUBSCRIPTIONS due and not paid	17	17	6			
Less Reserve for Doubtful debts	4	12	6			
	13	5	0			
Less Subscriptions paid in advance	9	0	0			
	4	5	0			
INCOME AND EXPENDITURE ACCOUNT:						
Deficit brought forward	80	19	11			
Add Reserve for Depreciation of Investments	175	0	0			
	255	19	11			
Less Contribution towards cost of special circular, 1955	18	0	0			
Balance deducted <i>contra</i>	237	19	11			
	£855	9	9			

Examined and found correct,
RALPH CHISLETT, A.C.A.,
Hon. Auditor (pro tem.)

£855 9 9

£855 9 9

BOOK REVIEWS

Mountain Flowers, by John Raven and Max Walters. Pp. xv + 240 with 16 colour and 28 monochrome photographs and 20 distribution maps. New Naturalist, Vol. 33. Collins. 25/-.

Mountain flowers have a special appeal to most field botanists, to nearly all of whom the mountains are too distant from home for week-end botanising. They are therefore the flowers which he or she associates especially with botanical holidays, and many readers of this book will have their pleasure in its contents heightened by the delightful memories it will so often recall.

The book is divided into two equal parts. Part one instructs; part two entertains. After an opening chapter by Mr. Raven outlining the history of botanical exploration of British mountains, Dr. Walters completes the first half of the book with accounts of the ecology and biology of mountain plants, and the history of the origin and development of our mountain vegetation. Many interesting facts and intriguing problems concerning distribution, reproductive mechanisms, post-glacial changes and other aspects of plant life on mountains are brought together in these chapters.

After the more solid introduction the reader can relax for the lighter reading of the second part which consists of discursive accounts of the botany of the principal mountain areas of Britain and Ireland. This section, the major part of which is written by Mr. Raven, will appeal especially to the peripatetic botanist who delights in seeing rare species in their natural surroundings, for the emphasis throughout this part is on rarities. Mr. Raven is an excellent guide. He has something interesting to say about every plant he mentions and he knows from long experience all the paths—or nearly all of them—and just where to turn off to see each choice item. He is also commendably discreet; the rarer the species the more vague he becomes about its precise location.

As one would expect of two such competent authors, inaccuracies and omissions are rare. *Arenaria gothica* is said to be confined to Ingleborough but this is untrue. It was found on a Yorkshire Naturalists' Union excursion in Littondale a few years ago growing in conditions exactly similar to those of its Ingleborough stations. The inclusion of *Polygonum viviparum* as an Ingleborough species is also incorrect. If the Oxenber locality is the one referred to—and it is the only one known in the district—this is no more on Ingleborough than Keltney Burn is on Ben Lawers. It is surprising too to find no reference to *Ajuga pyramidalis* as one of the notable mountain species of the Lake District. It is true that it has not been seen there for many years but has it been searched for with sufficient thoroughness? Its station is in a region not often visited by botanists. *Carex atrofusca* is not, as stated, confined to two localities in Perthshire. I have seen it in both the localities referred to and also, in far greater quantity, in a third station. The Argyllshire station for *Saxifraga cernua* is even richer than this account suggests, for *S. cernua*, *S. rivularis* and *Draba rupestris* all grow within a foot or two of one another in at least one place.

But every botanist who has explored the regions covered by this book will be able to add something here and there from his or her own experience, and part of the pleasure in reading it derives from the comparison of one's own experience and impressions with those of the authors. The book can be equally well recommended to all field botanists whether their explorations of our mountain flora lie in the past, the present or the future, as an informative and eminently readable account of one of the most attractive of all aspects of their field work.

W.A.S.

Features of Evolution in the Flowering Plants, by Ronald Good. Pp. xv + 405 with 162 drawings and text-figures. Longmans, Green & Co. 30/-.

This book is an attempt to apply to the flowering plants those evolutionary ideas which have so often been based on, or at any rate illustrated by, zoological data. By applying the principle that one of the best ways of learning more about causes is to study their effects with greater care, it aims to throw light on the course of evolution in this great group of plants through an appreciation of its achievements.

The first half of the book is devoted to a general review of the flowering plants designed to illustrate the multifarious evolutionary trends which they exhibit. For this purpose formal classification is replaced by descriptions of broad biologically

distinctive groups. These are intended to focus attention in the most convenient way possible in reviewing such a vast assemblage of plants, on the numerous evolutionary themes represented.

From the general review Professor Good next passes to an examination of particular instances, and his discussion of these concrete examples forms the most thought-provoking part of his book. Two lengthy chapters deal with the structural facts and evolutionary implications of the remarkable floral elaboration in the Asclepiadaceae. The conclusion is reached that their complex and elaborate pollination mechanisms have conferred no kind of special superiority or advantage over other plants, whilst their equally remarkable coronal elaborations also appear to be unrelated to the better performance of any function but rather to be an expression of gratuitous change.

Two further chapters deal with the pseudanthium which finds its highest expression in the capitulate inflorescence of the Compositae. Such floral aggregations which act functionally and visually as a single flower are commonly regarded as derivative and specialised conditions. But analysis fails to reveal any concrete evidence of biological virtue or reward resulting from the evolutionary changes expressed by these specialised conditions. Nor can this conclusion be dismissed on the grounds of the difficulty of assessing biological values, for the phenomenon is but one of many comparable instances. Equally inexplicable in terms of its evolutionary implications and significance are the very numerous instances of repetition of characters and superficial resemblances between wholly unrelated groups. A large number of such repetitions and resemblances, many of them unfamiliar to most botanists, and often very striking are assembled in the chapter dealing with this aspect of the wider evolutionary problem.

It is difficult, even if unreasonable, not to feel a sense of disappointment with this book, for the discussion and analysis of the facts assembled lead us nowhere. The conclusions reached are wholly negative save for the rejection of natural selection as a means whereby the facts can be accounted for adequately, and this is no new conclusion. Orthogenesis or mutational changes on a large scale are held to be more likely evolutionary mechanisms though little proof can be advanced of their operations. So far from casting light on the why and how of evolution in the flowering plants this book is like a beam of light projected into blank darkness. It illuminates our ignorance. There are however, in the latter part of the book especially, many facts and examples brought together which are of very great interest to botanists even if their inner significance remains unexplained. That they do remain unexplained is of course no fault of the author's, indeed a mind less notably free from preconceived ideas and theories could easily have reached faulty conclusions through basing argument on unjustified premises and assumptions. But the negative conclusions reached, though they may paradoxically be the most positive contributions of the book, seem a disappointing reward for the effort entailed in its reading.

W.A.S.

An Introduction to the Botany of Tropical Crops, by **Leslie S. Copley**. Pp. xvi + 357 with 82 photographic illustrations on 40 plates and 66 text-figures. Longmans, Green & Co., 1956. 37/6.

Many new books dealing with botanical or zoological themes cover such well-trodden ground that, even if they do it better or with more originality than their predecessors which is often far from being the case, the journey takes us through a familiar landscape. One of the merits of this book is that it covers much less familiar ground, for few other comparable surveys of tropical crop plants exist. The crops covered are, cereals, sugar cane, vegetable fibres, oil seeds, leguminous crops, starch storage crops, spices, beverage and drug plants, cultivated fruits, vegetables, rubber and essential oils. In all, over 150 different species cultivated in tropical regions are dealt with at lengths appropriate to their varied importance. The main botanical features of each are described together with information about their origin, regions of present cultivation, utilisation and commercial importance. Though this is primarily a text for agricultural students and all who are concerned with tropical agriculture, it will be a useful reference book for botanists of all kinds. The plates are excellent though page references to them in the text would have been helpful, and the drawings are so useful a supplement to the text that these might well be increased to cover more species when the next edition is prepared.

W.A.S.

Swifts in a Tower, by **David Lack**. Pp. 240 with 19 plates and 24 text-figures. Methuen & Co., London, 1956. 21/-.

The author of this fascinating work needs no introduction to naturalists. He is one of the few modern ornithologists who are willing and competent to devote themselves to the whole bird, scorning no aspect of its study and utilising that book-learning which is to-day termed 'scholarship' as a means to furthering his study and not as a form of exhibitionism.

Although Dr. Lack is a professional ornithologist and as such a true scientist, he retains the ability to condense his own work, which is usually first manifest in a series of authoritative papers, in a most assimilable way. In the present work he distils a vast amount of research into a fascinating story. The Common Swift was hitherto a little-known bird. Its nesting sites are dim and inaccessible and only by constructing a series of nesting boxes of special pattern and by patiently enduring a great deal of discomfort over a long period was Dr. Lack able to elucidate many of the outstanding problems concerning the bird. His researches have brought to light much that is new. Thus, in a bird whose food supply is greatly dependent upon the weather, the young are able to withstand relatively long periods of starvation by slowing down their whole metabolism in a kind of torpidity. It is interesting to note that the feeding swift is remarkable non-selective. From twelve meals collected from nestlings, over 300 species of insect were identified and many defied identification.

Although Swifts, unlike any other known birds, freely copulate on the wing, they nevertheless do so in the nesting hole. The high-pitched scream so typical of the species, when broken down by being played back from a recording at quarter speed reveals that it is by no means a single note but a call of considerable complexity which it seems likely is appreciated by the bird itself.

A chapter devoted to weather movements discusses the strange mass movements, against the wind, during the passage of a depression. As many as 27,000 birds have been counted passing southwards over Oland in a single day during early July, apparently to avoid a spell of continuous rain when food would be barely obtainable.

In a final chapter devoted to the problems of adaptation, Dr. Lack moves away from direct observation and reportage to argument and even to metaphysics but no true naturalist will deny him the right to speculate beyond the realms of evidence.

Swifts in a Tower should not only be read by every ornithologist, it should be on his bookshelf.

A.H.

Introduction to Bird Watching, by **Cecil G. Trew** and **Rosemary Upton**. Pp. 141 with 8 plates. Beaufort Library, Seeley Service, London. 15/-.

I approached this volume of august patronage with the hope that the editor of the series might have chosen, from the many available, authors who would address themselves to the task of teaching the 'young idea' with confidence and authority.

Of confidence there is no visible lack but the respect I was prepared to accord to their authority was somewhat diminished when I was advised that 'a small folding telescope is very useful', and though 'some kind of veil' has interesting possibilities and 'little pieces of brightly-coloured darning wool tied to bushes' may provoke harmless enough activity, it is in errors of fact rather than of advice that my main quarrels lie. A complete list of these would be wearisome but the Snipe and its allies are said to have 'sexes dissimilar', Swallows to lay 'unspotted eggs', the Tetraonidae to have the 'sexes similar', and the eggs of the Phasianidae to be 'heavily marked'.

In a list of 'Irregular Visitors' in a chapter on 'The Status of Birds' occur the Black-tailed Grouse (*sic*), Montagu's Harrier, Knot, Iceland Redwing, Turnstone and Wood Warbler, while 'Regular Visitors' include Sabine's Gull, Snowy Owl, Serin, Brown-backed Warbler and Montagu's Harrier! According to a table which indicates the sojourn of the regular visitors it is surprising to note that the Dunlin and Greenland Wheatear are with us from April to November, the Continental Hedge-sparrow from April to October, while the Crossbill briefly stays from June to October. Ringers are recommended to measure 'the wing from the lesser wing-coverts just to the tip of the first primary' and this collection of errors could be very much extended. I have indicated it so far only to justify my assertion that though the beginner may be credulous he is bound soon to perceive that all is not well and to lose faith in his mentors.

Do I carp? Then, of the Cuckoo—'*Young identifiable by larger size than fellow nestlings.*' (Italics mine.)

A.H.

The Bird Watcher's Reference Book, by **Michael Lister**. Pp. 256 with 35 photographs. Phoenix House Ltd. 45/-.

At a glance it might be thought that much of this book had small connection with birds, and certainly one can watch birds without it. The headings of the chapters with the number of pages used in each define the scope. Chapter I, 'Habitats, Vegetation and Birds' (10). II, 'Types of British Vegetation' (26). III, 'Weather' (20). IV, 'On Writing a Paper' (13). V, 'Directory' (30), covering periodicals, institutions, observatories, ringing-schemes, etc., of Britain and U.S.A., and of many other countries more briefly. VI, 'Glossary and General Reference Section' (55). In an appendix W. B. Yapp writes on the 'Classification of Habitats'. There is a bibliography, an index of scientific names of birds and plants named, and a general index of 47 pages.

A great deal of work must have gone into this compilation, which has stood up well to a number of random tests. Its value is partly ecological—we should all know the plants forming the habitat-types of our birds—and partly as a place of reference for matters and terms connected with ornithological field and subsequent work. Much of the contents will already be well known to the more experienced, but most of us have felt the want of such a work for quick reference at times, perhaps oftener than we would care to admit; and may do so again at any time. Some of the terms explained are unknown to ordinary dictionaries.

R.C.

Wild America, by **Roger Tory Peterson** and **James Fisher**. Pp. 416, including Prologue, Index, etc., and many illustrations in black and white by R. T. Peterson. Collins. 30/-.

This is 'The record of a 30,000 mile journey around the North American continent.' Beginning in Newfoundland, the authors travelled to Washington, turned inland to the Great Smokies ('warblers, warblers everywhere'—on migration), and as far south in Florida as The Tortugas; back along the Mexican Gulf to Xilitla ('if I mentioned all the birds we saw in Mexico this account would read too much like a list'), and to Texas ('Rockfort has become such a mecca for migration students that the cottages are always booked solid' for April), and Arizona (where 'we wallowed in birds'), and on to the Pacific Coast and some islands, calling for periods above the Grand Canyon, at the Yosemite National Park, Crater Lake, etc., and on again to Seattle. Destruction Island was visited, and the travellers passed to Alaska and the Aleutian and Pribiloff Islands, when Fisher returned to Seattle, New York, and England. *Circa* 30,000 miles in 100 days of April to mid-July 1953!

American R. T. Peterson planned. Routes deviated to take in numerous places of special interest, nature reserves, national parks, some marshy, some mountainous, forests and islands, descriptions of some of which I have not read before. James Fisher saw 401 birds new to him.

The book is 'woven together from our combined notes', and is immensely readable as exhilarating narrative and for the information imparted. Mammals and plant life, often in exciting landscape, varying from arctic to tropical and back again, are not forgotten. Variation in altitude took the travellers 'in and out of spring', and in and out of habitat zones too. 'Wilderness values' are called a human 'spiritual necessity'. They retained their freshness of outlook to the end. I owe them many thanks.

R.C.

The Rabbit, by **Harry V. Thompson** and **Alastair N. Worden**. Pp. 190 with 34 pp. of appendices, glossary and bibliography, 16 half-tone photographs and 31 maps and line drawings. New Naturalist Monograph. Collins. 16/-.

Everybody is familiar with the rabbit and all know from their own observations and from newspaper articles that the species has suffered a very severe check through the introduction of myxomatosis from France.

The first infection of wild rabbits in this country probably occurred in August or September, 1953, at Edenbridge in Kent and from there the disease has now spread over most of England and Scotland. Prior to this onslaught of disease the rabbit population of this country was believed to be in excess of a hundred million during the spring and summer months, but it is now reduced to a small remnant of animals that have probably developed some immunity to the disease. The important question now is, should these survivors be eliminated while the chance exists, or

should they be left to their own devices and be allowed to become numerous once more? It is stated in this book that the annual value of the furs and rabbit meat (15 millions) is small compared to the damage done to crops and pastures (40 to 50 millions) and that the rabbit is a very expensive luxury.

It is of course due to the economic importance of the rabbit that so much research work has been devoted to its habits and ecology. The results will be found in this most instructive and interesting book as also a full account of the spread of myxomatosis in this country. A legal section by Valerie Worrall and an excellent index complete a book which can be thoroughly recommended to sportsmen, naturalists, and all who are interested in the future of one of our best known British mammals.

E.W.T.

Animal Safari, by **Lutz Heck**. Pp. 212 with 4 coloured and 32 half-tone plates. Methuen, London, 1956. 25/-.

Gorillas Were my Neighbours, by **Fred G. Merfield** and **Harry Miller**. Pp. 250 with 8 plates. Longmans, Green & Co., London, 1956. 18/-.

Animals Are My Life, by **Lorenz Hagenbeck**. Pp. 254 with 25 plates. Bodley Head, London, 1956. 25/-.

Although we can now expect little new out of Africa, this is no deterrent to a recapitulation of the old. Dr. Heck, for many years Director of the Berlin Zoo, made a post-war trip to collect live animals in South Africa, mainly in the Kalahari and Etoshaland. His book is mainly a pot-boiler, relating among other things what would seem to be a surprisingly naïve search after the extinct quagga. It is notable, however, for some extremely good flashlight photographs of feeding lions.

Mr. Merfield is more retrospective and his reception may suffer in consequence. Gorillas were not only his neighbours but also his quarry when earning his living by collecting museum specimens during the early part of the century. He admits to killing 115 but is now concerned as to their conservation and his story, though blood-stained, is very readable. His experience of the big primates is extensive and he has much of interest to record concerning their habits.

Herr Hagenbeck, as one would expect from the bearer of such a famous name, deals almost entirely with animals in captivity and continues the story of the firm of animal importers and trainers which was started by his grandfather and continued by his father. He claims that by initiating the 'kindness training method' his family have made it 'their calling to mediate between animals and men' and to the extent that it has seen less reputable methods largely banished, his claim may in part be justified. The book is a lively account of menageries and circuses the world over and contains many diverting reflections upon famous personalities besides. To conduct a vast entourage of animals and human performers all over the world is to invite disaster of one kind or another and the devoted life of a Hagenbeck is to keep the worst of them at bay. The last war almost saw the end of this long-established enterprise and we must rejoice with the animals that, as long as there are to be circuses, it seems that their chief sponsors will be a family whose tradition it has always been that the welfare of their charges must ever be paramount to their own. That Herr Hagenbeck is an old man who has not forgotten how to chuckle adds much to the pleasure of reading his reminiscences.

E.H.

Gilbert White in his Village, by **C. S. Emden**. Pp. xv + 139. Oxford University Press. 15/-.

White's fame rests upon his powers as an accurate observer and chronicler whose ardent spirit of curiosity never flagged throughout a life devoted to observation of animals and plants. Of the hundreds of observations which he recorded nearly all are sound and this, together with his infectious enthusiasm and the atmosphere of country life which permeates his writing, have won for the *Natural History of Selborne* a firm place amongst English classics.

The biographical details relating to Gilbert White's life are already well known. This book is a character sketch which portrays the clerical squire and very human naturalist in relation to Selborne and his fellow villagers. It emphasises his personality and the scene in which his life's work was set rather than the work itself; his benevolence and philanthropic interest in local affairs, his affection for Selborne and interest in the welfare of the place and its inhabitants, his sociability and friendliness,

and his capacity for enlisting the interest and co-operation of farmers and villagers in his own natural history pursuits. It is a charmingly written study which well reflects both the engaging character of Gilbert White and the tranquil and serene setting in which he passed nearly all his life.

W.A.S.

The Golden Treasury of Natural History, by **Bertha Morris Parker**. Pp. 215 with numerous coloured illustrations. Publicity Products, London. 22/6.

The author of this book is a staff member of the famous Chicago Natural History Museum and an experienced interpreter of natural history to youthful audiences. The main part of the book consists of a survey of the animal and plant kingdoms preceded by a geological introduction and account of successive phases in the population of the world by living creatures, and ending with an astronomical section which relates this planet to the solar system and universe. The descriptive account is competently written and in a manner appropriate to its intended readers, but the illustrations are the most arresting part of the book. Seventeen artists have contributed over 500 coloured illustrations which collectively form both a comprehensive and impressive pictorial survey of the organic world. Numerous references in the text indicate that it has been adapted for British readers though its trans-Atlantic origin is still evident enough in the popular names given to many of the animals and plants described and by occasional statements such as 'Kew is the only place in Britain where you are likely to see ginkgoes' or that horsetails 'grow only in sandy barren areas'. Such statements are, however, of minor consequence in a book which should surely stimulate the enthusiasm of any boy or girl with an active interest in natural history and stir the imagination of those whose interest is still dormant.

Photograms of the Year, 1957: The Annual Review of the World's Photographic Art. Published for *Amateur Photographer* on November 16th, 1956, by Iliffe and Sons Ltd. Size $10\frac{3}{4}'' \times 8\frac{1}{2}''$. Pp. 136, including 104 plates—8 in full colour. Price 18/6 net (postage 1/4).

The new edition of *Photograms* brings the usual splendid collection of photographs specially chosen from amongst the year's finest work. Their varied range and interest of technique, expression and composition are skilfully reproduced by photogravure, single-colour and four-colour letterpress processes. The critical plate-by-plate commentary is by R. H. Mason, and Stephen Bone contributes an article on the principles of picture-making, particularly in colour. The introductory review of the progress of photography throughout the world is by A. L. M. Sowerby.

It is always a pleasure to welcome a new edition of *Photograms* for the beauty of the pictures can be enjoyed by everyone whether or not they are concerned with the technical reasons which qualify them for inclusion; while to the photographer, both beginner and more advanced worker, it is invaluable in pointing the way towards further progress in technical perfection and the appreciation of the art of photography.

Exercises in Biology to Ordinary Level, by **W. F. Wheeler**. Pp. vi + 45 with 10 figs. Heinemann. 2/.

Exercises in Biology to Advanced Level, by **Alan Dale**. Pp. viii + 54 with 12 figs. Heinemann. 2/.

These two booklets consist of classified questions from a variety of sources, and should prove valuable to both teachers and students. The aim is to assist candidates in learning the technique of writing a good answer. Since science depends very much upon logical reasoning and clear presentation of facts and theories, we must regard such assistance as an essential part of a scientist's training, and not simply as teaching the trick of pleasing the examiners.

The aid to the student includes in each book a section of advice on general principles, e.g. use and type of illustrations, planning answers, judging time. This section is quite extensive in the "A" book and includes two actual sixth-form answers with comments from the author. The "O" Level book prints model answers at intervals amongst the various sections. Both books add advice and cautions after certain questions in order to help the candidate to frame a satisfactory answer.

N.V.M.

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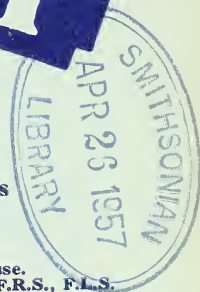
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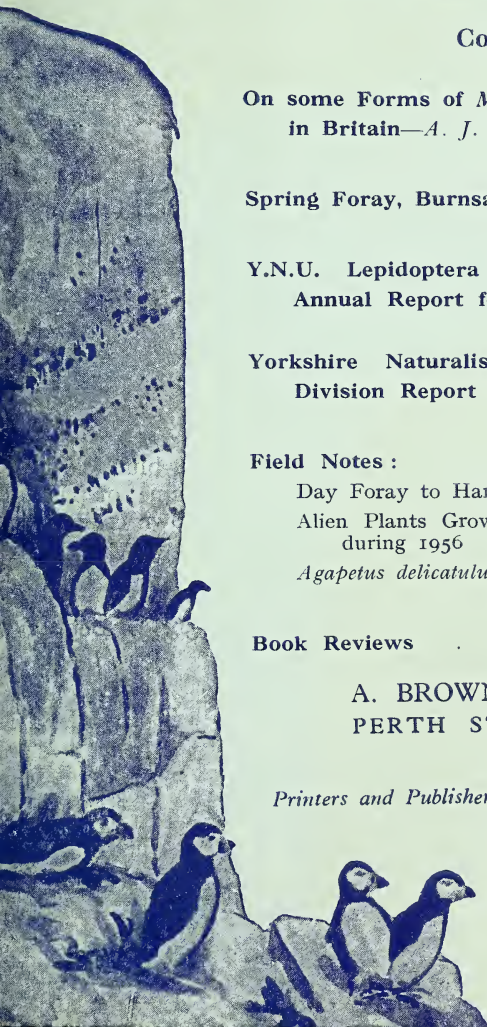
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WANTED. Copy of *The Naturalist*, for December, 1936. C. Dept., A. Brown & Sons, Ltd., Perth Street West, Hull.

ON SOME FORMS OF *MICRASTERIAS* NEW TO OR RARE IN BRITAIN

A. J. BROOK

Brown Trout Research Laboratory, Pitlochry, Scotland

1. *Micrasterias truncata* (Corda) Bréb. var. *neodamensis* (A. Braun) Dick. *Krypt. Forsch. Bayer. Bot. Ges. München*, 7, 448, 1926. (Fig. 1.)

Resembling the type species in size and general proportions, but differing in that the lateral lobes are divided only by a short incision to form a pair of lobules which bear short, stout teeth at each angle (the lower semi-cell in Fig. 1 is atypical in this respect). The incisions which separate off the polar lobes from the lower portions of each semi-cell are deep and usually closed, as in the type species, while the polar angles are strongly acuminate. Previously recorded from Wales (Woodhead and Tweed, 1954), a form which clearly resembles this variety is figured in West and West (1905), Pl. XLV, fig. 5. 70 μ l., 65 μ brd., 17 μ at isthm.

Rare in plankton of Point Loch, Sutherland (Grid Ref. 29/301420).

2. *M. mahabuleshwarensis* Hobson var. *europaea* Nordst. *K. Vet. Ak. Handl*, 22, 31, 1888. (Fig. 2.)

The sinus dividing the basal lobes of the semi-cells is deep and open as is also the incision separating the individual lateral lobes thus forming long, tapering and usually spiny, undivided lobules. The incisions between the lateral lobes and polar lobes are wide, the latter being large and extended, the upper portion being produced laterally to form divergent, denticulate processes which are almost equal in length to the lateral lobules. In addition, the apex bears a pair of denticulate accessory processes asymmetrically disposed between the lateral processes. Two rows of stout apical verrucae, usually four in number, are situated between these processes. The middle of each semi-cell above the isthmus is swollen, forming a small protuberance and bearing two granules. The semi-cells bear more or less complete rows of intramarginal spines within the primary divisions of the cell. 180 μ l., 140 μ brd., 22 μ at isthm.

Rare in the plankton of Loch an Daimh Mor, Sutherland (Grid Ref. 29/159432).

3. *M. mahabuleshwarensis* Hobson var. *dichomata* G. M. Smith. *Trans. Wisc. Acad. Sci. Arts and Letts.*, 20, 345, 1922. (Fig. 3.)

As Krieger (1937) states, this variety is somewhat difficult to separate from certain forms of *M. americana*. However, the ornamentation in particular, of the present specimens seems to indicate an affinity with *M. mahabuleshwarensis*, each semi-cell in the middle above the isthmus being furnished with a small denticulate protuberance and with a distinct series of intramarginal granules along the primary divisions of the cell, these being especially distinct along the base of the lower lateral lobes. There are also a prominent pair of granules on each side of the base of the incision which divides the apical lobe from the lower part of the cell. Also typical of *M. mahabuleshwarensis* are the well defined apical verrucae, a feature with according to Teiling (private communication) is seldom lacking in this species. The arms of the lobules, however, which are 2-5 spinate at their extremities are shorter than those shown in the figures depicting the var. *dichotoma* in Krieger (1937) Taf. 110, fig. 4, or in Prescott and Scott (1952), Pl. VI, fig. 3, and thus resemble those of *M. americana*. 120 μ l., 100 μ brd., 25 μ at isthm. Recorded from Wales by Woodhead and Tweed (1954).

Rare in the plankton of Bassenthwaite, Cumberland.

4. *M. mahabuleshwarensis* Hobson var. *Wallichii* (Grun.) West and West, *Brit. Desm.*, 2, 122, t. 54 figs. 7, 8; t. 55 figs. 1-3; 1905, forma *spinosa* fa. nov. (Fig. 4.)

A form of this quite commonly occurring variety in which a series of well-defined denticulations, increasing in size from apex to base and extending down the lateral margins of the apical lobes, was quite frequent in the summer plankton of Loch Shurrery, Caithness (Grid Ref. 39/044555) in 1950. The denticulations on the lateral lobules were also more strongly developed than normal.

5. *M. americana* (Ehr.) Ralfs *Brit. Desm.* xix, 1848, forma *reducta* fa. nov. (Fig. 5.)

A greatly simplified form of this species has been found in the plankton of Loch Eagheach, Perthshire (Grid Ref. 27/455568). In this form the accessory processes of the polar lobes are completely absent (cf. var. *Lewisiana* West), though the polar

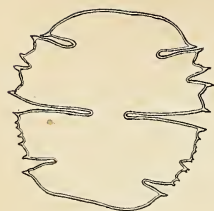


FIG. 1

M. truncata (Corda) Bréb. var.
neodamensis (A. Braun) Dick.

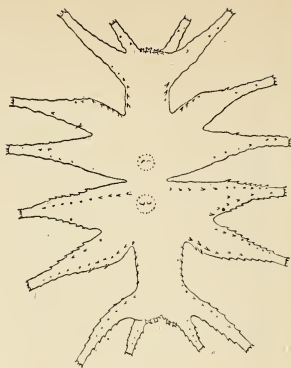


FIG. 2

M. mahabuleshwarensis Hobson var.
europaea Nordst.

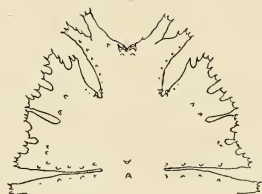


FIG. 3

M. mahabuleshwarensis Hobson var.
dichotoma G. M. Smith

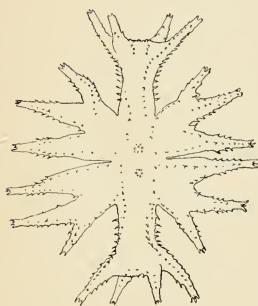


FIG. 4

M. mahabuleshwarensis Hobson
var. *Wallichii* (Grun.) West and
West forma *spinosa* fa. nov.

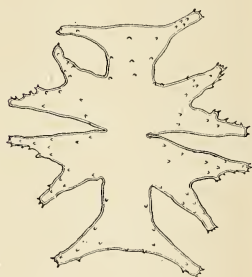


FIG. 5

M. americana (Ehr.) Ralfs forma
reducta fa. nov.



FIG. 6

M. radiata Hass. var. *dichotoma* (Wolle) Cushm.

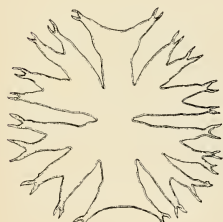


FIG. 7

M. radiata Hass. var. *pseudo-*
cruz Grönblad



FIG. 8

M. radiata Hass. var. *evoluta* Krieg.

lobes themselves are no shorter than in the type species. The incisions between the lateral lobes are deep and the lobes widely divergent. There is no subdivision of the upper lobes, but the slightly longer lower lobes each bear a very small lobule halfway along the upper margin. Lobes tipped with one to four sharp teeth. A few scattered granules present on the surface of both polar and lateral lobes. 120μ l., 120μ brd., 22μ at isthm.

6. *M. radiata* Hass. var. *evoluta* Krieg. Rabenhorst's Kryptog. fl., **13** (2), 71, 1937. (Fig. 8.)

One specimen which can be referred to this variety, previously recorded from Wales (Woodhead and Tweed, 1954), has been found in the plankton of the Mill Dam, Kinnaird Estate, Perthshire (Grid Ref. 27/970496). It is distinguished by a pair of asymmetrically disposed accessory processes between the polar lobes similar those found, for example, in *M. americana*. A further unusual feature of this particular specimen is the arrangement of the upper pair of lateral lobules which are at right angles to one another, an aberration previously recorded by West and West (1905) Pl. LII, fig. 9. 140μ l., 130μ brd., 17μ at isthm.

7. *M. radiata* Hass. var. *pseudo-crux* Grönblad. Acta. Soc. Flora Fauna fenn., **47**, 37, 1920. Fig. 7.)

In its general shape this variety may at times be confused with some forms of *M. crux melitensis* (Ehr.) Hass. and *M. radians* Turn. (See Prescott and Scott, 1952, Pl. VIII, fig. 4, and p. 247.) However, the open sinus and the shape and disposition of the polar and lateral lobes with their deeply furcate apices show its clear affinity with *M. radiata* (see Grönblad (1920) Taf. VI, figs. 12 and 13).

Rare in the plankton of Loch Chaluum, Caithness (Grid Ref. 39/022519). 110μ l., 105μ brd., 18μ isthm.

8. *M. radiata* Hass. var. *dichotoma* (Wolle) Cushm. Rhodora, **10**, 97, 1908. (Fig. 6.)

Occasional specimens with lateral lobules of considerable length (up to 60μ l.) and which can therefore be referred to this variety have been found in the plankton of Loch Eagheach. 180μ l., 170μ brd., 26μ isthm.

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SPRING FORAY, BURNSALL, 1956

W. G. BRAMLEY

SOME seventeen members and friends, a rather smaller number than usual, met to collect and study the spring fungi in the neighbourhood of Burnsall, April 19th-23rd. Favoured by dry though cold weather practically the whole of the period was spent in the woods in the vicinity of Barden Tower and Bolton Abbey. On the last morning four of the party paid a brief visit to Grass Woods which in the part examined was extremely dry and very little was found. *Stereum chailetti* on a pine log was the best thing. According to Mr. Reid, who identified the specimen, it is very uncommon.

The Bolton Abbey woods were also rather dry, especially on the northern bank, but a small wood adjoining Barden Tower proved much more fruitful and provided the best find of the meeting. This was a *Godronia* on blackcurrant, attributed to *G. urceola*. It has not been recorded for Britain previously. Material at the time of gathering was immature but has since been developed both by Mr. W. D. Graddon and the writer. It is hoped to publish a further note later about this gathering.

Many of the oaks towards Bolton Abbey showed the galls produced by *Dichosoma quercina*, but as usual no fructifications were present.

Three or four species of *Nectria* were collected and are being studied and cultured by Mr. C. Booth at the Commonwealth Mycological Institute.

Fine examples of *Vibrissea truncorum* in excellent condition were a feature of a small stream in a wood near Burnsall. *Diaporthe strumella* is apparently uncommon and of the four gatherings in Herb. C.M.I. three come from Yorkshire. *Didymella tosta* is far more common than its one vice-county record suggests and it can probably be found on the dead stems of rosebay anywhere in the county during spring and early summer. The same remarks also apply to *Micropodia pteridina* on bracken, which only occurs right at the base of the stem, and is generally partially buried in the soil or debris.

Thanks are due to all for their help in gathering and examination of specimens. Particularly are these due to Mr. W. D. Graddon for his list of Discomycetes, Messrs. C. Booth and M. B. Ellis of C.M.I. who have checked specimens of Pyreno- and Hyphomycetes submitted to them, and to Dr. Dennis and Mr. Reid of Kew for their continued help and guidance.

† New to Britain.

† Not in Mason & Grainger's *Catalogue of Yorkshire Fungi*.

* Not in Mason & Grainger's *Catalogue of Yorkshire Fungi* for V.C. 64.

Numerals after a species refer to Herb. C.M.I. accession numbers.

BASIDIOMYCETES

† *Odontia bicolor* (A. & S.) Bres.

Peniophora violacea-livida (Sommerf.) Mass.

† *Stereum chailetti* Fr. Grass Woods.

† *Puccinia cirsii-lanceolata* Schroet. 01.

DISCOMYCETES

† *Corynella prasinula* (Karst.) Boud.

† *Godronia urceola* (A. & S.) Karst., on *Ribes nigrum*.

* *Micropodia pteridina* (Karst.) Boud.

Sclerotinia tuberosa (Hedw.) Fuckel

† *Trichoscyphella willkommii* (Hartz) Nannf.

† *Tympanis confusa* Nyl.

Vibrissea truncorum A. & S.

PYRENOAMYCETES

* *Berlesiella nigerrima* (Blox.) Sacc.

† *Chaetosphaeria innumera* (B. & Br.) Tul., on *Acer*. 62904.

† *Cryptodiaporthe hystrix* (Tode) Petr., on *Acer*.

* *Cryptospora suffusa* (Fr.) Tul.

† *Diaporthe strumella* (Fr.) Fuckel, on *Ribes grossularia*. C.M.I.

* *Didymella tosta* B. & Br.

Leptosphaeria doliolum (Pers.) Ces. & de Not., on *Senecio jacobaea*. 62897.

* *Pseudovalsa lanciformis* (Fr.) Ces. & de Not. Grass Woods.

Trichosphaeria myriocarpa (Fr.) Petr. & Syd., on *Alnus*, 62900; on *Quercus*, 62903.

* *Xylaria longipes* Nits., on *Acer*.

FUNGI IMPERFECTI

Dinemasporium hispidulum (Schrad.) Sacc., on *Urtica*.

† *Brachysporium bloxhami* (Cooke) Sacc., on *Alnus*. 62901.

† *Graphium caliciodes* (Fr.) Cooke & Mass., on *Alnus*. 62902.

Y.N.U. Lepidoptera Committee. Addition to the Annual Report for 1956.—Mr. J. Armitage has been able to send me details of four more local *Acherontia atropos* L. (Death's Head Hawkmoth): September 9th, Ardsley near Leeds, a large female; September 14th, Meanwood, Leeds, a squashed specimen but equally large; September 29th, Roundhay, Leeds, a fair specimen, at shop lights; October 2nd, Alwoodley, Leeds, large and in good condition. These bring the total for the county to seventeen.—F. HEWSON, *Recorder*.

YORKSHIRE NATURALISTS' UNION (VERTEBRATE SECTION) ORNITHOLOGICAL DIVISION

Chairman: RALPH CHISLETT, M.B.O.U., F.R.P.S.

Hon. Secretary: R. F. DICKENS, 8 Marlborough Gardens, Leeds 2.

Recorders:

East Riding: H. O. Bunce, 37 Auckland Avenue, Hull.

North Riding—*East:* A. J. Wallis, 13 Raincliffe Avenue, Scarborough.

West: J. P. Utley, B.Sc., M.B.O.U., 24 Neile Close, Romanby, Northallerton.

West Riding: R. Chislett, Masham.

York District: E. W. Taylor, C.B.E., F.R.S., M.B.O.U.

Spurn Bird Observatory: *Hon. Secretary:* G. H. Ainsworth, 144 Gillshill Road, Hull.

General Editors: Ralph Chislett and E. W. Taylor.

Report for 1956

The Division was represented at the summer field meetings and useful contacts and distributional observations were made. The March and October sectional meetings attracted good attendances.

January and February were severe months with frosts and heavy snowfalls particularly on the eastern side of the county. Roundhill Reservoir was still completely iced on February 26th when the thaw had just begun. The night of March 1st was one of terror for motorists, with many hundreds of old trees brought down by a fierce gale over a wide area, after which Harewood and other parks presented pictures of destruction, of which some effects remained visible all summer. Another great gale blew on June 4th to 5th, and others at the end of July, and on August 13th. Late spring and early summer were dry, all waters were low at midsummer until rains came in July and continued into autumn, with only occasional dry days. By August 19th, Leighton Reservoir was full, and A. F. G. Walker was lamenting 'no mud' at Gouthwaite, but this was compensated for as regards waders by unusually extensive, drainage-produced mud at Brotherton. It was the wettest August for many years, and rains continued into September. Late autumn and early winter were mild save for short periods in December.

THE SPURN BIRD OBSERVATORY

(G. H. Ainsworth and R. Chislett)

Individuals who contributed observations numbered 143; some came for only one or two days, others for more than 50 days. These enabled the observatory to be manned on 234 days in the year—March 17th to May 13th, and August 5th to November 8th were covered continuously. In addition there were numerous day visitors, parties from several societies and from training colleges and schools; and a Junior Bird Recorders' Club course was conducted by G. R. Edwards.

We like to think that our work at Spurn can be styled educational, from the number who come to learn as all of us do, and as being in the nature of migrational research, with the peninsula as our wide, open-air laboratory, from which the results, studied and published, help to add to knowledge, general and individual. Perhaps we may be pardoned if we ask if it would not be appropriate for the educational authorities to lend weighty support to our efforts to have the peninsula declared a 'nature reserve' so that interests that endanger the fauna and flora may be guided and controlled. Dr. E. Evans, of the Nature Conservancy, has recently consulted with the land owners and the Planning Authority; but strong Yorkshire support, especially from the East Riding, is needed.

Species of birds recorded in the year numbered 171, of which Red-headed Bunting, Richard's Pipit and Firecrest were new to the observatory. Other species include several rare waders, six species of tern, two of shrike, four of owl, two of harrier, and Bluethroat, Black Redstart, Shore-Lark, Crossbill, Twite and Lapland and Snow-Buntings. A few rarities seen in several recent years failed to be observed in 1956: Barred Warbler, Icterine Warbler, Yellow-browed Warbler, Red-breasted Flycatcher, Ortolan Bunting; such are all the more likely to appear in 1957. The number of Lapland Buntings that passed in autumn was unprecedented.

When Mr. R. Spencer (Secretary to the Ringing Committee) was asked in a recent broadcast for a leading instance of valuable work done by ringers in 1956,

	Total to 31/12/55	Ringed in 1956	Total 31/12/56		Total to 31/12/55	Ringed in 1956	Total 31/12/56
Storm Petrel	1		1	<i>Brought forward</i>	1579	176	1755
Fulmar		1	1	Redwing	136	9	145
Mallard	1		1	Ring-Ousel	11		11
Scaup		1	1	Blackbird	2306	276	2582
Long-tailed Duck	1		1	Wheatear	110	8	118
Common Scoter	1		1	Stonechat	21	2	23
Sheld-Duck	2		2	Whinchat	132	27	159
Sparrow-Hawk	18		18	Redstart	386	61	447
Merlin	2		2	Black Redstart	35	3	38
Kestrel	12	4	16	Nightingale	6		6
Red-legged Partridge	24	4	28	Bluetthroat	5	1	6
Partridge	5	1	6	Robin	1051	26	1077
Pheasant		2	2	Grasshopper-Warbler		2	2
Corncrake	1		1	Reed-Warbler	7	3	10
Water-Rail		2	2	Sedge-Warbler	141	8	149
Moorhen	10	1	11	Icterine Warbler	3		3
Oystercatcher	1		1	Blackcap	45	8	53
Lapwing	3		3	Barred Warbler	10		10
Ringed Plover	70	13	83	Garden-Warbler	106	27	133
Turnstone	1		1	Whitethroat	951	165	1116
Common Snipe	2		2	Lesser Whitethroat	45	11	56
Jack Snipe	1		1	Willow-Warbler	1127	127	1254
Woodcock	4		4	Greenish Warbler	1		1
Green Sandpiper	1		1	Chiffchaff	61	8	69
Wood Sandpiper		1	1	Wood-Warbler	12		12
Redshank	8		8	Yellow-browed Warbler	4		4
Dunlin	7	3	10	Goldcrest	220	28	248
Common Gull	5	1	6	Spotted Flycatcher	107	8	115
Little Tern	54	6	60	Pied Flycatcher	472	30	502
Razorbill	2		2	Red-breasted Flycatcher	7		7
Little Auk	1		1	Hedge-Sparrow	436	36	472
Guillemot	6	1	7	Meadow-Pipit	624	122	746
Puffin	2		2	Tree-Pipit	9	2	11
Wood-Pigeon	1		1	Rock-Pipit	4	2	6
Turtle Dove	2		2	Pied Wagtail	2		2
Cuckoo	90	6	96	White Wagtail	1		1
Little Owl	5		5	Yellow Wagtail	5		5
Long-eared Owl	4	1	5	Waxwing	1		1
Short-eared Owl	1		1	Great Grey Shrike	6	1	7
Swift	2		2	Woodchat Shrike	1		1
Hoopoe	1		1	Red-backed Shrike	5		5
Greater-spotted Woodpecker	1	1	2	Starling	670	40	710
Wryneck	12	4	16	Greenfinch	1334	66	1400
Skylark	105	17	122	Goldfinch	25		25
Swallow	245	35	280	Siskin	3		3
Sand-Martin	34		34	Linnet	1866	121	1987
Carriion Crow	2		2	Redpoll, Lesser	8	1	9
Rook	4		4	Redpoll, Mealy	9		9
Jackdaw	9		9	Bullfinch	2		2
Magpie	11	3	14	Scarlet Grosbeak	1		1
Jay	1		1	Crossbill	4		4
Great-Tit	51		51	Chaffinch	1100	100	1200
Blue-Tit	86	5	91	Brambling	315	18	333
Coal-Tit	1		1	Yellowhammer	63	8	71
Willow-Tit	2		2	Corn-Bunting	11	3	14
Long-tailed Tit	3		3	Ortolan Bunting	1		1
Tree-Creeper	2	1	3	Reed-Bunting	421	56	477
Wren	166	21	187	Snow-Bunting	195	46	641
Mistle-Thrush	3		3	House-Sparrow	1506	233	1739
Fieldfare	34		36	Tree-Sparrow	23	2	25
Song-Thrush	454	39	493				
<i>Carried forward</i>	1579	176	1755	<i>Total</i>	17748	2271	20019

he instantly referred to the new technique for trapping Snow-Buntings evolved at Spurn in the winter months. In January to March we ringed more of that species than had previously been ringed anywhere, in all years.

With such a good start to the year, subsequent ringing was a little disappointing, and our total of birds ringed in the year, 2,271, was three short of the total for 1955. Some interesting birds appeared in early September: Wryneck, Bluethroat, Redstart, Garden-Warbler, Lesser Whitethroat and Spotted and Pied Flycatchers, some of which stayed for days and were retrapped. But, for reasons unknown, numbers were fewer than at some other observatories on the east coast to which this was a peak period. Our best day for ringing in autumn was October 16th, with 76 birds ringed. We had no real rush of Blackbirds this year, and Robins and Goldcrests were few, but Redstarts and Chaffinches recovered somewhat from their poor showing in 1955. Details appear in the table.

Interesting recoveries at a distance will be found recorded under the headings of Blackbird, Linnet, Song-Thrush, Cuckoo, Meadow-Pipit, Black Redstart and Snow-Bunting. Four House-Sparrows were recovered at a distance, one 27 miles north-west.

There were some interesting re-traps: a Skylark of August 7th, 1950, was re-trapped on July 10th, 1956, and had not been caught between those dates. A Reed-Bunting of March 23rd, 1951, recaptured on March 30th, 1956, had been caught in every year between excepting 1952, and another of September 26th, 1951, was re-caught in 1955, and on March 26th, 1956. The following table omits House-Sparrows and Snow-Buntings, which latter species will be better compared winter by winter than year by year, since the year-end comes in the middle of its stay—it will be remembered next year.

BIRDS OF 1956, RINGED IN PREVIOUS YEARS

Re-trapped in 1956	Years when Ringed					
	1955	1954	1953	1952	1951	1950
21 Linnets	12	6	2	1	—	—
5 Reed-Buntings	3	—	—	—	2	—
10 Blackbirds	8	—	1	—	1 (found dead)	—
6 Whitethroats	5	—	1	—	—	—
3 Meadow-Pipits	1	1	—	1	—	—
16 Hedge-Sparrow	10	2	1	3	—	—
15 Greenfinches	13	1	1	—	—	—
9 Skylarks	6	1	1	—	—	1
1 Song-Thrush	1	—	—	—	—	—
1 Starling	1	—	—	—	—	—
1 Swallow	1	—	—	—	—	—
2 Moorhens	2	—	—	—	—	—
1 Red-legged Partridge	—	1	—	—	—	—
91	63	12	7	5	3	1

The wet late summer had at least one good effect: visitors were discouraged from the sands at week-ends with the result that some Little Terns reared young, and more Ringed Plovers, too, were reared than in 1955.

Most of our regular helpers now hold Class 'A' or 'B' Ringing Permits from the Ringing Committee, and can be left in charge as competent to ring and record; which also applies to some of our visitors. Others come with 'C' permits and can only ring under supervision; or without permits simply to help with watching and driving and to learn and we are glad to have their help and to help them. If for some reason such find themselves alone they must not ring, nor must they attempt to record birds with which they are not familiar. If they do, far from helping us they do the reverse and become a source of danger. It has become necessary for us to ask applicants for accommodation to state if they hold 'A' or 'B' permits, if they do not volunteer the information, so that the Hon. Secretary can plan for an experienced ringer to be always present as far as possible. To have visited other observatories does not mean that a person is competent to ring or be left in charge.

The Committee wish to thank all who have helped in so many ways, especially with repairs and building of traps. If damage to traps is repaired immediately,

small holes will not grow into big ones so quickly as sometimes happens. The rule that makes provision for replacement of broken crockery by those responsible for the breakage should not be forgotten.

THE HIGHROYD TRAP (ROY CROSSLEY)

That results for 1956 were rather disappointing was probably not entirely due to shortage of time by those responsible. Some 242 birds were ringed of 26 species, of which 79 were Willow-Warblers and 31 Whitethroats, one of which was in Spain 25 days later. Details of four distant recoveries appear hereafter under the headings of Greenfinch, Yellow Wagtail, Pied Wagtail and Whitethroat. A White Wagtail was trapped on May 1st. Only one Yellow Wagtail was ringed against 49 in 1955.

WHARFEDALE NATURALISTS' TRAP (W. F. FEARNLEY)

In 1956, 1,172 birds were ringed of 46 species. Details of eight distant recoveries will be found under the headings of Lapwing, Curlew, Lesser Black-backed Gull, Blackbird and Starling. The re-traps include a Chaffinch and a Robin both of which were at least five years old.

HARROGATE NATURALISTS' SOCIETY

Four registered ringers in the Harrogate area ringed 3,438 birds of 59 species in 1956. Included were 1,301 Sand-Martins, 367 Swallows, 252 Lapwings. The total included both nestlings and trapped birds. From such figures there are certain to be interesting recoveries in the future.

BOOTHAM SCHOOL N.H.S. (C. J. SMITH)

Birds ringed totalled 1,184 of which 1,043 were Starlings. Fifteen Starlings were recovered abroad: Holland, Germany, three; Denmark, five; Sweden, Norway, Poland, Estonia, two; and one from Minsk, U.S.S.R. Quite a picture in miniature of the origins of Starlings from abroad that winter in England.

There are other private ringing-traps operated in the county. An individual recovery gains in value by inclusion with others of the species concerned. Only repeated recoveries placed together can show tendencies of time, routes and destinations. We hope that details of all recoveries of importance affecting Yorkshire, whether of trapped birds or juveniles, are sent to us; especially since the Ringing Scheme now only publishes selected items. Would it be quite playing the game as intended for records to be kept back by any who receive news of the recoveries of others through the medium of these reports?

Other matters referred to under the specific headings might be referred to here with possible advantage, but space is limited. Connections might be traced between events, dates, habitats and areas, wind and weather, in some cases apparent under one area but not under all. Those who read the report in the light of sufficient knowledge will be able to 'piece together' for themselves. When I have tried to tabulate such facts I have had to desist when it became clear that the length of the report would be increased thereby not reduced.

When preparing the 'Classified List' this year I had help for several days from E. W. Taylor. To all who have sent notes and thereby collaborated with us, my colleagues and I offer thanks. Many now send in their notes in more than one batch during the year, which is particularly helpful if the items are placed in 'Check-list' order, and enough details given to forestall subsequent correspondence. The report is only possible by the joint and several efforts of all.

Species known to occur in the year, but not included in the list, were: Partridge, Green Woodpecker, Jackdaw, Jay, Marsh-Tit, Long-tailed Tit, Hedge-Sparrow (see Spurn retraps).

CLASSIFIED LIST

(B.O.U. CHECK LIST ORDER. WITH 'HANDBOOK' NUMBERS BEHIND)

1. **Black-throated Diver** (378).—Occurred recognisably in the early months much more frequently than usual—February 1st, on the River Hull near Dunswell, a first winter female in poor condition (A.H.) brought to H.O.B. by a wildfowler;

two on the Ouse in York on February 25th (E.W.T.); an oiled bird at Swillington on February 12th (K.S.); one at Fairburn, February 26th to 28th (C.E.A., R.F.D., J.C.); one Gormire Lake, March 31st to April 1st (I. Lawrence); and one at Castle Howard Lake on April 8th (T.E.D.). At Hornsea Mere, Blackthroats occurred January, 1st 15th, 22nd (M.K.T., G.R.B.); one found dead on February 25th (M.K.T.); one on April 3rd, 14th and 22nd (M.W., I.G.C., M.K.T.); and one on the sea off Hornsea on May 19th (G.R.B.). Off South Gare was one on February 5th (D.R. and P.S.). In Scarborough Harbour, one on March 4th to 5th was slightly oiled (J.R.M., Miss D. M. Ward). None occurred inland in autumn. One was at Teesmouth, October 20th-21st (D.G.B., B.C.). At Spurn, of two entered in the list for April 10th, no details were given.

2. Great Northern Diver (376).—Recorded for Teesmouth for February 5th (P.J.S.); two on September 15th (D.G.B.) with several probables subsequently; one on October 15th (D.G.B.) and 21st (B.C.), and December 23rd (B.C.). At Winterset Reservoir (Cold Hiendley) on December 31st a Great Northern Diver seen at a few yards range was trying to remove oil from flank and under tail (K.S.).

3. White-billed Diver (377).—One found in a moribund state at Whitby, died on March 17th (A.B.W.).

4. Red-throated Diver (379).—The conditions that brought so many Blackthroats inland in the early months also brought Redthroats. Two were fishing on the Ouse above York on February 5th (E.W.T.); and on the same day one was found dead at Worsborough Bridge Reservoir (T.M.C., A.A.). One was at Gouthwaite on February 19th (M.R.S., I.D., A.G.); one at Dam Flask Reservoir (Sheffield) on March 4th (D.R.S.); one at Wath Ings (Dearne Valley) on March 18th (A.A., D.S.); one at Leighton Reservoir, March 11th (R.C.) to April 22nd (E.E.J.); one at Castle Howard Lake on March 3rd and 31st (B.D.) and April 2nd (C.W.F.H.). The remains of one were at Lingerfield Gravel Pits in April (J.R.M.).

Frequently recorded on the coast from January to May 27th when a bird was in summer plumage at Teesmouth (D.R. and P.S.); and at Hornsea Mere with a maximum ten on April 8th (M.K.T.), and an oiled bird with a red throat on June 10th (R. Girling). Spring passage at Spurn was mainly concentrated from late March to April 5th with 84 as maximum on April 1st. Thirty were off Easington on March 7th (J.C.H.L.). One found oiled at Whitby on May 27th was cleaned and released (A.B.W.).

In the autumn divers were noted almost daily at Spurn, with 26 on October 10th, 36 on October 28th and November 15th, and 150 counted passing in just over one hour by J.C. on December 15th (all but eight were moving northward). All the divers at Spurn that could be clearly identified were of this species, which was noted at Teesmouth as early as August 27th (B.C.), with up to eight subsequently on many days until the year end.

5. Great Crested Grebe (370).—In the Fairburn area 44 adults were counted on May 1st, 24 nests were found subsequently, and at least 30 young were produced before drainage by the Electricity Authority caused the adults to desert in early July from Brotherton Ing, where most of the breeding pairs were, with disaster to the young and to unhatched eggs. Elsewhere some 25 pairs on many waters were known to produce 49 young, not all of which would reach maturity. Many of the Brotherton grebes passed temporarily to Swillington Ing. One was present at Hornsea Mere on January 1st (G.R.B.), and 15 on December 30th (M.K.T.).

6. Red-necked Grebe (371).—Several occurred in February. On the 4th at Teesmouth (yellow of bill seen) (P.J.S.) and at Redcar (D.R.S.); February 11th and 12th at Gouthwaite Reservoir (A.F.G.W., A.G.); at Eccup on the 23rd (A.F.G.W.); and a female found moribund at Whitby also on the 23rd which later died (A.B.W.).

7. Slavonian Grebe (373).—Occurred, one at Lindley Wood Reservoir on December 11th (K.D.); and one at Lockwood Beck Reservoir on December 16th (M. Allison).

8. Black-necked Grebe (374).—One was on Bridlington Bay on February 5th (J.R.M., J.A.S.B.). Two nests of this species, with five and four eggs, were abandoned consequent to the drainage of Brotherton Ing by the C.E.A. The species was attempting to breed in the county for the third known time. One appeared at Swillington Ing on June 30th and stayed until October 6th, moulting during the period (W.C.W., J.C., etc.). One at Thrybergh Reservoir on June 10th remained for some weeks

(J.B.H., A.E.P.); and one was at Bottomboat on June 12th (W.C.W.). One Black-moorfoot Reservoir, November 4th and two, November 11th (E.C.J.S.). Two were at Fairburn on April 8th (J. Ackroyd), and one, April 3rd (W.C.W.).

9. Little Grebe (375).—Bred successfully on many waters. Maxima recorded after breeding season: Bottomboat, *c.* 72 on October 6th (W.C.W.), Swillington Ing, 43 on October 7th (A.H.B.L.). Odd birds occurred at Spurn, September 10th to 17th, and on November 10th and December 1st.

[12. Leach's Petrel (351).—A dark bird, 'akin in size to a Black Tern' that appeared at Fairburn on December 2nd, had a white rump 'broken by a dark patch in the centre' and the rest of the plumage dark except for grey patches on the upper surface of the wings in the region of the wing-coverts. The bill was short and dark; the wings long and rather tern-like in proportion to the body, with flight buoyant and with long glides as it turned into the wind. So low over the water it hovered sometimes with beating wings as to appear almost to settle. The bird was watched for *c.* 90 seconds at a range too great for definition of the shape of the bill (K. Senior). The tail was not seen to be forked but the bird was probably of this species.]

16. Manx Shearwater (355).—Shearwaters with black upper, white underparts, with characteristic flight, and correctly sized were noted at Redcar on July 20th (out of 15-20, definitely three were Manx), and four on the 21st. Nine passed N-W off South Gare on July 21st, all were definitely Manx (D.R. and P.S.). One was found washed up on the beach at Redcar on September 2nd. One flew north near Bridlington on September 1st (J.C.H.L.).

Was recorded at Spurn indefinitely on June 16th and September 9th, and one definitely on September 15th. On October 5th of 80 Shearwaters that passed, 15 were close-in and clearly Manx, and the tubular nostrils could be seen on the bill of one bird (B.S.M., E.C.D., R.E.S.). Eight were entered on the 6th October.

21. Sooty Shearwater (363).—A completely dark Shearwater with paler areas on undersides of wings was noted south of Bridlington on September 24th (J.C.H.L.). At Teesmouth on October 6th, the pale area on undersides of wings of a large dark Shearwater (which was slightly less dark below) was not noticed by P. J. Stead who is satisfied the bird was of this species (P.J.S., D.G.B.).

26. Fulmar (368).—One flew S-W in the Dearn Valley on June 9th (R.J.R.). One flew over Clay Bank, near Stokesley on July 1st and disappeared down Bilsdale (B.C.). One was found in a garden at Elland on September 4th and taken to C. Williamson; after being fed on shrimps and herrings for four days it was taken to and released at Bridlington (I.M.). At least three frequented a quarry some half-mile from the sea at Ravenscar throughout the summer (A.J.W.). Breeding birds were normal. Some 84 nestlings were counted on *c.* eight miles of chalk cliff in early August (H.O.B., A.W.). More passed at Spurn than usual, especially from early June to September, with 25 on August 26th.

27. Gannet (349).—Present at Bampton on March 11th (J.C.H.L.); five nests were built but no more than two young were seen. Another site was occupied intermittently by a sub-adult \times adult, apparent pair. Birds were seen carrying nesting material into a fresh site invisible from above (H.O.B.). A swimming juvenile off Atwick on August 16th was attended by an adult (L.S.). Eleven mixed adults and juveniles were seen off Flamborough on August 5th (A.W., H.O.B.). Five adults and one juvenile were on Bampton ledges on September 1st (J.C.H.L.). Maximum seen at Spurn was 109 on October 15th. Seen regularly at Redcar with maximum of *c.* 50 on July 20th (D.R. and P.S.). Occurred inland; one at Ossett on September 24th; one Wakefield in mid-September (G.C.); one at Faxfleet, October 27th (J.E.S.W.).

28. Cormorant (346).—Birds breeding on Hunt Cliff often take the direct line overland to the Tees Estuary. The Boulby Cliff colony did well (D.R. and P.S.). Cormorants appeared at Ingleton in August (W.K.M.), and near Catterick on December 22nd (G.R.P.). One ringed at the Farne Islands on 19/9/54 was at Bridlington 17/4/55 (Farne Islands Report). Always present at Hornsea Mere in winter, spring and autumn. Birds with head and neck pattern similar to those of the 'southern race' were noted—one, Flamborough, March 25th (H.O.B.); one, Hornsea Mere, March 28th (F.E.C.), and 30th (M.K.T.), and April 27th (S.M.). Out of *c.* 15 at Bampton on March 30th, six were so patterned on head (G.R.B.).

29. Shag (348).—Ringed Farne Islands (1) 10/7/54 and (2) 25/6/54, recovered (1) Bampton 6/3/55 and (2) Aldborough (E.R.) 13/3/55. Young were seen in a cave-nest in late July (L. Draaijer), and an adult by a cave-nest on August 6th (S.M.);

both at Flamborough, where the maximum number of 48 was counted on August 10th (A.W.). Elsewhere only odd birds were reported infrequently.

30. Heron (289).—Occupied nests recorded were: Gargrave, six (O.M.P., H.J.W.); Scampston, 12 (R.M.G.); Hornsea Mere, 31 (F.E.C.); Gilling, nine (J.P.U.); Sleningford (site changed), three; Whixley, three (R.C.); Harewood, five on May 17th, but some trees had been blown down (O.M.P., H.J.W.). Three broods were reared near Rye House, Helmsley, and three in a new heronry in Sleightholme Dale (E.W.T.). Herons recorded in the winter months include Wath Ings, nine on November 11th (J.B.H.); eight over Seven Arches (Bingley) on November 23rd (S.L.); nine at Swillington Ing, October 15th (I.M., C. Lees); and 14 at Gouthwaite on December 9th (A.F.G.W.).

At Spurn single Herons occurred on March 30th and May 3rd with three on April 26th and one or two almost daily from August 12th to early October. Ringing records hitherto omitted: Heron ringed Wiveton, Norfolk, as nestling, 2/5/54; Grinton, Swaledale, 24/1/55 (Norfolk Report). Ringed Alingsås, Sweden (57°55' N., 12°32' E.), 14/6/51, found near Rotherham, 20/12/52 (*British Birds*). Ringed, Isle of Man (Jurby), 22/5/50, as nestling; near Barnoldswick, 18/6/55 (*British Birds*).

36. Night Heron (295).—At dusk on November 11th at Fairburn, fading light prevented examination of plumage details of a large bird ('about size of raven') that flew c. 20 feet above water towards W. C. Wakefield and C. Winn, and passed them within 15 yards, 'stocky-bodied', 'of compact form', wings relatively broad and rounded, heron-like bill carried horizontally, feet projecting about an inch beyond short tail. A single guttural note ('Kauv' or 'Kcow') of about two seconds duration sounded at intervals varying from five to 18 seconds. The bird encircled the marsh below for several minutes before passing on to Brotherton Ing. Night Heron was suspected.]

38. Bittern (297).—A Bittern was found exhausted on March 3rd at Balby, Doncaster, following gales; it died two days later (A.E.P., R.J.R.). One, possibly two, were at Hornsea Mere on February 27th (M.W.).

42. Spoonbill (287).—A good description was given by A. Credland to H.O.B. of a Spoonbill seen through binoculars at Welwick Saltings on April 29th at c. 75 yards range.

45. Mallard (317).—Ringed as juvenile, Rauma, Finland (61°08' N., 21°30' E.), 31/7/52; Bridlington, 3/12/52 (*British Birds*). One ringed Hamar, Hedmark, Norway (60°48' N., 11°5' E.), 11/6/55; shot, Ingleby Greenhow, 22/2/56.

The day-time concentrations on reservoirs of early January (maxima Eccup c. 1,350 on January 1st (A.H.B.L.), Leighton c. 350, January 2nd) broke up as the severe weather came, and partially recovered after the thaw, when on March 17th c. 420 were on Bubwith floods (A.F.G.W.), then dwindled to the few of spring. At Fairburn 199 were sleeping on ice on February 23rd (J.D.P.) but most birds had gone to the estuaries. On February 25th Mallard and Teal fed among manure spread over fields at Hornby Park (G. R. Potts). In autumn Mallard at Leighton Reservoir numbered c. 1,200 by mid-November, many of which descended to the rivers for feeding; but a farmer some eight miles eastward had more Mallard on his barley stubble in late autumn than he had previously known. Parties came to and from the reservoir mostly from or to east and south-east. At Eccup Reservoir in autumn there was an average number of c. 496 with maximum of c. 724 on December 8th (R.V.J.). Two people who count Mallard on a water used as day-time sanctuary may produce figures differing widely according to the time of counting. Flights come and go, possibly sometimes with the same birds involved. At Hornsea Mere c. 3,000 were present on February 28th and December 26th (G.R.B.). About 120 on February 11th was the Spurn maximum in the early months; and c. 200 on December 13th and 14th maxima of autumn.

46. Teal (311).—A drake ringed Denmark, 3/7/50, was recovered near Hull, 31/12/50 (*British Birds*). The species was noticeable in the vicinity of most moorland areas in summer. Nine drakes on May 27th were disturbed from three tarns successively, which was probably indicative of the breeding pairs on that moor (F.W.B., R.C.). Thirty-four were included in the passage of ducks eastward at Spurn on April 2nd (see under Wigeon). Notable concentrations were: c. 1,000, Knostrop Sewage Farm, January 22nd (R.F.D.); c. 300, Hornsea Mere, January 28th and February 3rd (M.W., G.R.B.); c. 430 at Bubwith floods on March 25th (A.F.G.W.) and c. 132 at Winterset Reservoir (W.C.W.); c. 500 at Aughton Ings on April 2nd (L.S., H.O.B.), and on the Humber near Brough on April 17th (S.M.); c. 550 between Brough and

Broomfleet on September 11th (S.M.); *c.* 400, Swillington Ing, September 16th (J.C.); *c.* 100 at Harewood (J.R.G.), and *c.* 195 at Gouthwaite Reservoir (A.F.G.W.) both on November 11th; *c.* 210 at Brotherton Ing, December 2nd (W.C.W.); and *c.* 500 were at Hornsea Mere, December 26th and 30th (G.R.B., M.K.T.). At Gouthwaite, while other Teal 'upended', a drake dived 18 times in two minutes with dives mostly of seven seconds duration (A.F.G.W.).

47. Garganey (322).—Present in the Dearne and Don valleys from early April; and up to six about the Fairburn Ings and the lower Aire valley, also throughout the summer, without any proof of breeding (Barnsley, Doncaster, Leeds, etc., bird-watchers). Last seen at Brotherton Ing, three on October 7th (W.C.W.). A drake occurred at Hornby Park Lake on April 7th (M.R.S.). A pair occurred on a pond near Fountains Abbey on April 28th and 29th (D.F.W., A.F.G.W.).

49. Gadwall (318).—A male occurred at Eccup Reservoir on March 3rd (A.H.B.L.). The species was seen at Fairburn on April 1st (K.S.), 8th (C.W., G.W.) and up to eight on several days from October 14th to November 11th (E.E.J., C.W., G.W., W.C.W., J.D.P.). Two were at Swillington Ing on August 14th (K.S.) and 25th (W.C.W.) and at Bottomboat on August 19th (K.S.). Hornsea Mere showed four on November 14th and December 2nd (G.R.B., M.K.T.).

50. Wigeon (323).—There was no proof of breeding this year. Two drakes and a duck at Lanshaw Dam on June 11th (S. Bond) had gone a few days later. The flock at Spurn in the early months was usually fewer than *c.* 150; and *c.* 330 on February 13th were no doubt connected with the freeze-up inland. On April 2nd a movement of ducks and waders down the Humber and across the peninsula to E or N-E included 402 Wigeon (J.C.). One on May 19th was the last at Spurn. Six appeared on September 2nd, and thence the flock built up gradually to *c.* 150, subject to fluctuations. On October 6th and 7th considerable passage of Wigeon north-westerly was watched at Redcar (D.R. and P.S.), and Teesmouth (P.J.S., B.C.); and on October 28th 127 passed between 1020 and 1320 hours (D.R. and P.S.).

On inland waters Wigeon seem to have been average until the January-February frost and snow came. At Hornsea Mere were *c.* 520 on February 2nd, a notable increase that soon dwindled. Bubwith (Derwent) floods attracted large numbers reaching *c.* 4,000 on March 17th (A.F.G.W.) and *c.* 3,500 on March 18th (Bootham School). On the Upper Humber were *c.* 1,000 near Brough on January 12th, and *c.* 2,000 at Derwent Ings on April 2nd (L.S., H.O.B.), which had fallen to *c.* 1,100 on April 8th (H.O.B.).

Numbers built up to average figures in autumn on most waters usually frequented. Ten were on Cherry Cobb Sands by August 12th (G.R.B.). There were *c.* 550 at Hornsea Mere on November 14th (G.R.B.); and *c.* 670 on December 29th when several parties came in from the direction of the sea.

52. Pintail (325).—Was unusually frequent from January to April 17th, being recorded on 14 waters, in very small numbers or pairs, and as odd birds. The waters watched most frequently showed the most records and were mainly in the Harewood, Eccup, to the lower Aire, and Humber areas, and at Hornsea Mere, Teesmouth and Spurn. Six at Bubwith Ings on February 12th, and *c.* 35 on March 11th (Bootham School); six at Aughton Ings on April 2nd (L.S., H.O.B.); 12 at Castle Howard Lake on March 30th (K. Dale); and 26 at Teesmouth on April 9th (B.C., P.J.S.) were the largest numbers. Five at Hornsea Mere on November 14th (G.R.B.) was the maximum of autumn.

53. Shoveler (326).—Nests were robbed in the Dearne Valley but ducklings were seen. Bred successfully at Fairburn; and suspected elsewhere. Occurred on over 20 waters with records covering every month. J.R.G. recorded *c.* 150 at Fairburn on June 9th. Hornsea Mere showed *c.* 150 on November 8th (I.G.C.) which could have included some of the 68 at Fairburn on the 11th (W.C.W.), and some of the *c.* 50 at Skipwith Common during November (E.W.T.).

Mandarin (*Aix galericulata*).—It should be recorded that this species introduced pinioned into Swinton Park in 1954, bred in secluded herbage in 1955 and reared one female duckling. This, the only unpinioned Mandarin, nested in a hole in an old beech in 1956, was sitting on June 4th, having been flushed from the hole on June 1st; and on July 2nd appeared on the lake with four ducklings. During incubation the duck left the hole shortly before the ornamental fowl's feeding time, secured her share of the food, and returned to the hole, which was so deep that my arm was not long enough to reach down to the nest (R.C.).

55. Scaup (331).—Occurred at Spurn on most days from February 11th to March 18th with maximum of *c.* 120 on March 2nd. At Teesmouth small parties occurred and rather more were seen than in an average winter. There were *c.* 40 in Bridlington Harbour on March 11th (M.N.R.); and several at Whitby on February 23rd (T.W.A.W.). Occurred along the Filey to Scarborough coast during January to early March with maxima of 21 (three males) on February 18th in Scarborough North Bay, and *c.* 23 in Jackson's Bay on February 26th (A.J.W. and H.M.F.). Hornsea Mere had odd birds in February to March 4th. Up to eight were seen on various dates at Fairburn Ings from January to May 13th (R.F.D., J.D.P., T.D.B., etc.), with two on May 23rd (C. Winn) as the last. A few also occurred at Bubwith Floods, Winterset Reservoir—three on March 13th (K.S., M.N.R.), Barnby Dun Ponds, Coniston Cold, Swillington Ing, Chelker Reservoir and Ogden Reservoir.

A male appeared at Gouthwaite on July 15th, 22nd, and four on October 28th (A.F.G.W.); one Eccup Reservoir, October 6th (A.H.B.L.), and one at Lindley Reservoir on December 29th (Batley N.S.). Ten were at Teesmouth on September 15th (D. G. Bell), one, September 30th (P.J.S.), and one, December 2nd (G.R.P.). At Spurn, Scaup occurred on September 26th (five), October 8th (11), October 12th (four) and November 17th (eight). Off Hornsea, nine appeared on November 14th (G.R.B.), with two on September 17th and December 9th (M.K.T., R.W.D.) and one on October 14th on the Mere.

56. Tufted Duck (330).—Broods were seen at Fairburn, Harewood, Bottom-boat, Bretton, Farnley, Gouthwaite and bred elsewhere. The maximum of *c.* 350 at Fairburn on April 1st (K.S.) no doubt included migrants. Thirty-six were at Spurn on April 2nd; up to seven having been visible on most days in late February and early March. One duck with five young at Fairburn on July 5th had a Scaup-like patch at the base of her bill. The high-lying Fly Flatts Reservoir had 47 on October 14th (C.R.S.). Usually seen on many waters in autumn-winter. Maximum at Hornsea Mere: *c.* 130 on February 2nd and 9th (G.R.B.) and *c.* 250 on December 29th (G.R.B.). *Circa* 120 were on Melton Ponds on December 2nd (B.P.).

57. Pochard (328).—A number of pairs bred in the Brotherton-Fairburn area; at least 60 young were seen. The Brotherton drainage made some broods take to the river where passing barges caused separation. C. Winn and G. Wallis watched the build-up at Fairburn from *c.* 112 on February 18th to 312 on March 25th. The species was less frequent and on fewer waters than the preceding one. In autumn there were few at Fairburn; and maxima were: 95 at Gouthwaite on December 16th (A.F.G.W.); 35 at Swillington Ing on December 2nd (J.E.S.W.). Hornsea Mere had *c.* 160 on February 2nd and *c.* 330 on December 29th (G.R.B.), with an average of *c.* 200 from October 14th.

60. Goldeneye (332).—More than 40 waters showed Goldeneyes, in most cases at both ends of the year. The effects of ice on some waters in February could be seen on others; and on the more low-lying sheets, and on rivers. Maxima were *c.* 40 on March 3rd at Hornsea Mere (J.C.H.L.) and April 1st (M.K.T.); *c.* 50 at Fairburn on March 4th (E.E.J.) and 25th (C.W., G.W.); *c.* 30 at Lindley Reservoir on February 26th when both Fewston and Swinsty were frozen (J.C.L., Otley N.S.); 39 at Gouthwaite on February 29th (T.D.B.). Late birds were three at Gouthwaite (A.F.G.W.) and one at Fewston (B.P.) on May 13th; and one, Fairburn, on May 26th (A.H.B.L.).

The earliest of autumn were: one at Lindholme on October 6th (J.B., A.E.P., J.S.T.), and one at Gouthwaite, with nine there on the 7th (A.F.G.W.). Two were at Hornsea Mere on October 7th (M.K.T.); three coasted N-W at Redcar on October 6th (D.R. and P.S.), and 17 flew northwards across Tees Bay in three hours on the 7th (P.J.S.). Except at Hornsea Mere where *c.* 50 had appeared by November 18th, and the figure had risen to *c.* 75 on December 29th (G.R.B.), numbers were lower than in the early months.

61. Long-tailed Duck (334).—One occurred on five days from January 14th to 28th at Hornsea Mere (G.R.B., M.W.); and three were off Hornsea on February 20th (M.K.T.). On February 12th and 19th one swam in Filey Bay (H.M.F., T.M.C.). A male flew N-W at Redcar on October 7th and 28th (D.R. and P.S.). There was an immature bird at Fewston Reservoir November 4th; and a male at Blackmoorfoot Reservoir on November 3rd (J.C.S.E.) which remained until the 27th (B.A.). The duration of 12 dives averaged $49\frac{1}{2}$ seconds between which the bird surfaced for *c.* eight seconds (I.G.B., R.Cr.).

62. Velvet Scoter (340).—More numerous on the coast than usual in the early months from Teesmouth—six on February 25th (P.J.S.)—southward. Noted from

Redcar on several days—12 on February 18th (D.R. and P.S.). On February 28th 16 were off Huntcliffe (D.R. and P.S.). A large influx occurred about Scarborough in early February, and up to *c.* 100 were seen on March 3rd (A.J.W.). Nineteen drakes were seen off Bridlington on March 31st (J.B.H.); and others but fewer occurred in the vicinity on various dates; and off Spurn. A few occurred inland: one on four days in January at Fairburn (C.W., K.S., J.D.P.). Of two at Ogden Reservoir on February 12th, the female stayed until February 25th, got trapped under ice, was later found dead; and her skin is in the Bradford Museum. Nine were still off Redcar on June 1st and one on July 20th. Autumnal records were few; but from August 5th (two at Spurn) to December 8th (one, Redcar) the species was seen on a number of dates. Four were recorded for Fly Flatts Reservoir on November 17th (J. M. Ridsdale).

64. Common Scoter (339).—Occurred in usual numbers off the coast in the early months. Large flocks were: *c.* 300, Redcar, April 12th and 20th, when parties breaking off flew S-E; on the 22nd only five were left (D.R. and P.S.); *c.* 150, Redcar, July 15th, *c.* 260, October 24th, *c.* 226, December 8th, *c.* 250, south of Bridlington, July 1st (J.C.H.L.), *c.* 300 off Filey, March 3rd (A.F.G.W., M.R.S.). Seen at Spurn on most days from mid-June with maximum *c.* 275 on August 5th. Three were found oiled and dead in April, on the Teesmouth to Redcar coast, and many more must have suffered (O.C.H.). Near North Ferriby, *c.* 100 were on the Humber on October 11th (B. Pashby). The species was recorded from 15 inland waters, 12 being moorland reservoirs and tarns. The odd records from Fairburn and Wintersetts occurred in winter; eight were at Bretton on August 4th. The species may call at the hill waters at any time of the year but especially in late summer.

67. Eider Duck (337).—Up to 14 (January 7th, N. Yule) occurred about Teesmouth in January and February; and odd ones off Huntcliffe, Whitby, Filey Brigg and in Bridlington Bay. A female off Whitby on January 7th caught a small crab and was pestered for it by her immature companion (A.B.W.). One was off Aldborough on April 2nd (G.R.B.). A drake and duck occurred off Spurn on June 2nd (J.C.); three on July 22nd and one on December 15th. A single male flew from north into the Tees estuary on October 28th; and a female was off Redcar on November 3rd (D.R. and P.S.).

69. Red-breasted Merganser (343).—More numerous on the Durham side of Teesmouth than in previous winters and occurred on the Yorkshire side: two males on March 17th, and one on April 21st (D.R. and P.S.). One was in Bridlington Harbour on March 4th (B. Dale). Odd birds occurred along the coast near Scarborough in February (H.M.F., T.M.C.), and three spent a week in the North Bay (A.J.W.). At Hornsea Mere a female occurred on January 21st (F.E.C.) and 28th (M.W.), and a male on April 18th (R.W.D.). There was a male off Flamborough on March 25th (A.W., H.O.B.); and a male with two females at Spurn on March 3rd (J.C.). One was off Redcar on July 15th (D.R. and P.S.), and at Teesmouth the first occurred on September 15th (D.G.B.) and several afterwards (P.J.S.). On October 27th several 'redheads' occurred at Sprotborough Flash (A.E.P.), one at Fairburn on the 28th (C.W., G.W., W.C.W.), and a male on December 23rd (W.C.W.), and one at Swinsty on November 4th (W.F.F., H.J.W.).

70. Goosander (342).—Recorded on 16 inland waters with maxima 64 at Eccup on March 11th (A.H.B.L.) and 68 at Stocks Reservoir on March 10th (M.R.S.). The last was at Leighton Reservoir on April 18th (E.E.J.), and three were at Spurn on April 22nd (J.C.). A female in Filey Bay on October 6th (A.J.W.) was the first of autumn. At Eccup numbers built up from eight on November 11th to *c.* 46 on December 30th (R.V.J.). Hornsea Mere had Goosanders from January 1st to April 8th (45 on March 10th, M.K.T.); and from November 4th with *c.* 60 on December 29th (G.R.B.).

71. Smew (344).—Up to four occurred on various dates from January 2nd: two at Ogden Reservoir (C.W.) to March 25th; three at Fairburn (R.F.D., K.S.). 'Redheads' outnumbered definite males. The severe spell produced one at Spurn 'Canal Zone' on February 19th; and two on the Esk at Ruswarp on February 21st (A.B.W.). The other waters concerned were Hornsea Mere, Eccup Reservoir, and Wintersetts Reservoir.

73. Sheld-duck (315).—Bred in the upper Humber area; 20 adults and 85 juveniles were seen near Brough on August 9th (S.M.). At Cherry Cobb Sands two adults led 13 ducklings over the mud on June 20th (J.C.H.L.); and on July 25th there was one adult with 34 juveniles (H.O.B.); and September 3rd 14 juveniles

were unattended (B. Pashby, H.O.B.). Two adults were in charge of 25 ducklings at Read's Island on July 10th (J.C.H.L.). Up to four were seen at Swillington Ing from March 23rd to June 9th but breeding was not evident.

Sheld-ducks were reported at 13 inland reservoirs, flashes and sewage farms in all months but February, July, and September; with maxima 11 at Fewston Reservoir on January 28th (E.S.S., C.G.B.); 12 at Blackmoorfoot Reservoir on January 28th and nine on October 28th, both after northerly gales; eight at Ogden Reservoir on January 30th (C.W.); and six at Gouthwaite that came from S-E on October 28th, alighted and later flew up the Nidd Valley (A.F.G.W.). The usual passing flocks occurred on the coast with maxima at Spurn, 48 on March 18th. During the moult migration period, 48 on July 21st and 35 on the 22nd were noted. After another 48 on August 24th very few occurred at Spurn in autumn. On the Humber near Brough were *c.* 215 on September 11th (S.M.). There were *c.* 440 in the Tees estuary in late December (P.J.S.).

75/78. Grey Geese (303/307).—A Pink-footed Goose ringed as adult in Iceland by Mr. P. Scott on 2/7/53 collided with a car on Whitby Laithes on January 12th, 1956, and could fly away on the 13th (A.B.W.). *Circa* 2,000-3,000 were on the Upper Humber on January 25th, and fed on Broomfleet Island, leaving with hard weather on the 31st (Humber Refuge Committee). Parties noted flying in various directions at a number of places in the period January to March were always pinkfeet when identified; as were *c.* 200 flying N-E near Catterick on April 19th; and seven on May 3rd; *c.* 100 that flew N-E near Catterick on April 27th were possibly white-fronts from calls (G. R. Potts). Eight were on the Upper Humber on April 23rd (S.M.). A pinkfoot was with Canadas at Leighton Reservoir on October 6th (M.R.S.); and at Ripley on November 11th (A.F.G.W., A.M.C.), and one was at Fairburn on December 23rd (W.C.W.).

Circa 50 were on the Upper Humber on September 16th, and had increased to *c.* 4,000 by October 7th, and to *c.* 6,000-7,000 by October 9th (H. W. Refuge Committee). *Circa* 38 flew S-W at Spurn on October 5th and small numbers occurred on the next three days. In early October more than usual resorted to Holderness for feeding. Wold flights virtually ceased by mid-October and the main flights were to Lincolnshire, with *c.* 2,000 feeding in the low country near Blacktoft in late October (H.W. Refuge Committee, H. Boyd, H.O.B.). At morning flight near Broomfleet on November 5th, *c.* 10,000 flew north (F. Mason). In North Yorkshire, Redcar, near Loftus, etc., on several days from October 1st, flocks flew south (D.R. and P.S., M.A.), and over Luddenden Valley; where *c.* 400 flew west on December 16th (C.R.S.). *Circa* 350 flew west over Newton up the Aire Valley on December 2nd in two skeins (W.C.W.). Numerous other reports of skeins in the last three months of the year indicate movement to and from the Humber and to the west.

80. Brent Goose (312/13).—A flock of 30 were at Teesmouth on January 28th (P.J.S.). Eight Dark-breasted Brents were in Jackson's Bay, Scarborough, On February 26th (A.J.W.). A single bird appeared at Spurn on October 27th, and December 27th.

82. Canada Goose (314).—Bred at Stocks Reservoir: one pair (A.P.); Harwood, one pair (D.B.I., J.R.G.); Walton Hall Lake, one pair (K.S.); Burton Agnes Lake, one pair (H.F.W.); Castle Howard Lake, one pair (E.W.T.); Gouthwaite Reservoir, one pair; Ripley, three pairs; Scarhouse and Scargill Reservoir, one pair each; and at Bretton Park Lake; and many by the several waters west of Masham, where also at least two pairs produced young from nests in long heather on the moor (P.Y., R.C.). Places visited by Canadas where not often recorded include Malham Tarn, Ogden Reservoir, Stocks Reservoir, Whitton Sands in March (H.W. Refuge Committee), and near North Ferriby on December 2nd (B. Pashby). There was a maximum of *c.* 350 at Harewood on January 15th (J.R.G.), but in autumn numbers were much fewer—on December 29th disturbance caused the *c.* 160 present to fly to Eccup (R.V.J.). On October 29th, *c.* 207 were at Leighton Reservoir (M.R.S.). Canadas were absent from Gouthwaite from October 14th to the year end except for four on December 9th (A.F.G.W.).

84. Mute Swan (302).—There was a maximum of 69 adults and three broods of eight, six, and three at Fairburn on July 8th when the water at Brotherton was much reduced causing complications (R.F.D.). Forty-nine were at Swillington on October 7th (A.H.B.L.). At Bottomboat the maximum of 39 occurred on February 19th in severe weather (E.G.). Winterset had 21 on January 1st (W.C.W.). In the Dearne Valley up to 16 (September 19th) were recorded (J.C.H.L.). Smaller

numbers occurred in many places at which also broods were reared. The maximum at Hornsea Mere reached 36 on November 11th (M.K.T.); and at Melton Ponds (Upper Humber) 52 also on November 11th (B. Pashby). Smaller numbers occurred in many places where also broods were reared.

85. Whooper Swan (300).—Whoopers were reported in 1956 from 32 places all over the county, of which nine had records for both ends of the year, 18 in the early months only, and five in the autumn only. There were no very large numbers, maxima in the early months being 20 at Wheldrake on March 18th (B. Dale), up to 13 during most of January in the Dearne Valley (A.A., C.E.B., etc.); 16 at Semerwater on January 2nd (P.J.S., A.B., K.B.), of which seven were still there on April 3rd (I. Lawrence); and ten at Chelker Reservoir on January 1st (O.M.P., W.F.F., H.J.W.). The last noted in the Dearne Valley occurred on April 21st-22nd (R.J.R., J.C.H.L.). Five flew out to sea at Spurn on April 15th (H.G.B., E.S.S.). Three were at Redcar on April 8th (D.R.S.). The first of autumn occurred at Fewston Reservoir (four) on October 26th (A.F.G.W.); seven at Blackmoorfoot on October 27th (E.C.J.S.) and nine on the 28th (J.C.S.E.); and four at Hoyle Mill Dam, Hemsworth, on October 28th (A. G. Gough). Sixteen at Stocks Reservoir on November 11th included two pairs of adults with families of four and five (G. H. Acklam). Five were at Hornsea Mere on November 12th (G.R.B.).

86. Bewick's Swan (301).—Early in the year it became known that ice on the waters of Friesland had caused the Bewick's Swans to leave; and they became unusually plentiful from the Wash across to the Severn. The earliest reported in Yorkshire were five at the iced Thrybergh Reservoir (near Rotherham) on February 5th (R.J.R.); and 14 at Bottomboat also on February 5th (K.S.), which became 26 by February 12th and so remained until March 18th (E.G., K.S.), but for one found dead. Fairburn had fewer with 20 on March 3rd (C. Winn) as the only record exceeding seven. Eighteen at Mickletown Flash on April 1st (K.S.) were also probably visitors from another water.

At Gouthwaite Reservoir were 14 on February 7th, and 18 more arrived on the 9th with much bugling as the two herds met and mingled (A.F.G.W.); apparently they left on February 21st when *c.* 30 swans were seen to fly up the valley. It had been useful to examine all three species of swan together (C.G.B., E.S.S., R.C.). Sixteen were at Hoyle Mill Dam, Hemsworth, on April 1st (A. G. Gough); 16 at Bubwith Ings on March 17th (A.F.G.W.); 23 at Worsborough Bridge Reservoir on March 25th and four on April 15th in the Dearne Valley (A.A., D.S., D.A.); and 18 at Cowton Bottoms on March 15th (A.B.). At Hornsea Mere Bewick's Swans occurred from February 19th (15, F.E.K.) to April 16th (M.K.T.); and a sick bird until May 4th (G.R.B.)—maximum 20 on April 2nd (F.E.C.). At 15 other waters under ten occurred on various dates. Single birds on May 29th at Bottomboat (obviously unwell, K.S.), and at Fairburn (E.S.S.) were the latest. Small parties were on eight waters in autumn from November 4th when four had reached the Dearne Valley (J.B.H., G.F.K.).

91. Buzzard (269).—Bred in the N-W at two places (H.W.B.). Scarcity of the rabbit in our hill-country made it unlikely that wandering pairs in search of an area with food plentiful would come to Yorkshire. Single birds were noted in many areas; from Raincliffe Woods near Scarborough on April 21st (H.M.F.) and Chevet Wood on April 29th (K.S.) to Spurn on October 4th; and to various parts of the hill country.

92. Rough-legged Buzzard (268).—One was seen frequently about Eskdale in the early months (A.B.W.). One eating grouse near Ilton on December 24th had feathered tarsi (P.Y.). One haunted Bransdale Moor in November (A. Gordon); and one at Castle Howard during November was probably of this species (B. Dale).

93. Sparrow-Hawk (277).—One broke its neck in December against a glass window of a Helmsley clothing factory (A.G.). Nested normally. Single birds were noted at Spurn on March 18th, August 27th and 29th, and on October 14th and 17th; and one coasting N-W at Staithes on April 21st (D.R. and P.S.).

99. Marsh Harrier (271).—A cream-crowned bird was at Hornsea Mere on January 15th (M.K.T., G.R.B.) and 28th (M.W.). All other records were in May: on the 9th near Seaton (Hornsea) (G.R.B.); on the 20th at Hornsea Mere (W. Wright); on the 14th at Castle Howard (R.M.G.); and at Spurn on May 5th.

100. Hen Harrier (273).—Occurred on Rudland Moor, January 5th to 7th (T.E.D.); a male near Loftus on February 1st (M. Allison); one, Dallowgill Moor,

on January 25th, and one, Ilton Moor, on January 11th (P.Y.), and at Leighton on the 16th (E.E.J.); near Guisborough on March 29th (M.A.); and near Langsett, in the Little Don Valley, a male on May 27th (A.A., D.A., D.S.). A hen near Loftus on November 8th and a male on December 16th; and a male at Scaling Dam on November 10th (M.A.). A female excited Snow-Buntings near the Chalk Bank at Spurn on December 30th (J.C., D.A.R., C.W.).

102. Montagu's Harrier (272).—A pair were seen, together and singly, in the N-E in spring, but breeding was not proved. A newspaper report of nesting in V.C. 65 was unfounded; and seemed to match the published claim of the 'Bradford Bird-fanciers Association' to have found a Red-necked Grebe's nest at Malham Tarn!

103. Osprey (284).—Lord Morpeth saw an Osprey at Castle Howard Lake on April 30th (R.M.G.). One was seen carrying a fish in Duncombe Park on May 27th as Jackdaws mobbed it (C. D. Milne); and A. Gordon reported one over the Rye at Helmsley in early June (P.J.S.). An Osprey was shot at Crockey Hall, near York on or about September 8th and was taken to the York Museum (G. F. Willmott); it proved to be a female. One was reported from Rombald's Moor on October 28th (D.V.).

105. Peregrine Falcon (259).—Seen by many people on the coast in spring and bred, having half-fledged young on May 27th (J.R.G., G.R.W., etc.). At the inland eyries, birds were seen but did not seem to breed; but bred just over the county boundary (J.P.U.). Peregrines were seen at various times of the year about the fells and moors in the N-E and N-W, and at South Gare and Spurn, on a dozen occasions. A decomposed bird on the shore near Spurn on February 11th had apparently been shot (R.F.D., D.G.R. and others).

107. Merlin (262).—Occurred at Spurn on two days in January, on March 31st, on nine days in September, on eight days in October, and on November 16th and December 1st. Also in the East Riding were birds at Skeffling on September 8th (W.A.B.), at Welwick on December 23rd; and one flew in from sea to land almost exhausted at Tunstall on December 30th (A.C.). On the N-E coast the species was noted on August 21st, September 1st, October 7th and 11th and November 25th. A large proportion of the foregoing birds were doubtless Yorkshire passage migrants or winter immigrants. In different inland *lowland* country, dates were: January 3rd and 24th, March 15th and 17th, April 14th and 15th, October 28th, November 9th and 17th, December 9th and 29th. Merlins were on Ilton Moor (a breeding area) on January 9th and 17th (P.Y.), and on April 19th; which latter, like one on Pateley Moor on March 30th (G.R.P.), could be an early arrival to breed. The species bred as usual on a fair number of moors. A keeper-naturalist said he never missed a year without seeing breeding pairs; but most of us who are not on moorlands daily look on the species as distinctly scarce, despite the winter visitors and passage migrants.

[108. Red-footed Falcon (265).—In October near Wheddale Moor, Mr. C. L. Baldwin and his son had good views from his car at about ten yards range of a Falcon settled on a roadside stone. The bird had ruddy underparts and red legs, and on seeing the reproduction of Joseph Wolfs painting of the Red-footed Falcon in the Christmas number of the *Field* declared it to be a replica of the bird he saw (A.G.).]

110. Kestrel (263).—Ringed near Harrogate (pull) 17/7/56; found dead near Sturton, Lincolnshire, 25/11/56 (M.R.S., A.F.G.W.). Again reported bred on Leeds Town Hall (S.J.W.). At Gouthwaite a Dipper escaped from a Kestrel by dropping into the river (I. and S. Downhill). G.R.W. observed *c.* ten Kestrels move south at Spurn in the afternoon of October 4th; the day of maximum passage.

111. Red Grouse (514).—A young bird on the Colsterdale Moors on September 6th was no more than three weeks old (P.Y.).

113. Black Grouse (513).—Two hens were near Gouthwaite Reservoir on January 11th (P.G.R.B.). Two cocks were seen on Bowes Moor on February 9th (A.B.). Seen in Bowland in March and November (G. H. Acklam).

115. Red-legged Partridge (519).—Pair and brood seen in early summer below the Masham Moors (J. Rough per P.Y.). One was found exhausted on April 16th in a Halifax garden (I.M.). One was picked up in the centre of Huddersfield on April 3rd (E.C.J.S.). A pair was seen in the Rudland district on April 24th where they are not usually present (T.E.D.). Other records concern areas where the species is normally resident.

117. Quail (520).—Two near Melton Ponds on May 6th (B. Pashby) were the only Quails recorded.

118. Pheasant (517).—A bird's crop on November 3rd held 36 beech nuts (J.P.U.). At Spurn one was recorded on April 11th-12th; two on October 11th, 12th and on December 14th; and one on several other days in autumn.

120. Water-Rail (509).—Recorded at Spurn on February 15th, April 11th, and October 13th, 15th and 22nd. When Hornsea Mere was frozen on February 25th, three were seen and two were found dead (F.E.C., H.O.B., J.C.H.L.). Two fed by the Calder at Altofts on February 25th (J.C., W.C.W.). One was at Chevet on January 4th (J.C.); one near Doncaster on January 3rd and on seven other dates to March 23rd (R.J.R.); and one at Brotherton Ing, March 11th, and one at Newton Ing on November 17th (R.F.D.). One was found dead at Thurstonland, near Huddersfield on October 12th (E.C.J.S.); and one seen at Gorpel Reservoir on December 26th (J. Crossley) was found dead on the 28th (E.W.W.).

125. Corncrake (504).—Heard at three places near Otley in May (Otley N.S.), and at Leathley on May 14th; near Menston on June 1st and 14th (Mrs. C. B. Jackson, Miss F. Houseman); near Barnoldswick on July 24th to 31st (Mrs. A. P.); in Nidderdale in June (A.F.G.W.), and in the Sedbergh area (Sedbergh School Report), near Alwoodley (R.V.J.); near Askrigg; and on the Holme Wood Estate, near Bradford (A.W.A.S.). Heard also in the East Riding near North Cliffe (E.B.B.); and one was put up by a farmer near Benningborough on September 26th (A.W.P.). One was picked up dead on the rail track at Womersley on May 5th (L. C. Ballard). At Spurn one occurred on May 4th.

126. Moorhen (510).—Some 74 were counted on the big lagoon at Knostrop on April 15th (A.H.B.L.). A nest c. 18 feet from the ground had an old Wood Pigeon's nest for support (B.D.).

127. Coot (511).—One swam in Bridlington Harbour on April 1st (A.F.). Appeared at Spurn, one on February 11th in hard weather; and two immature birds in the Lagoon area on September 23rd. At Hornsea Mere c. 350 on January 22nd (M.K.T., G.R.B.) had increased to c. 500 on February 2nd (G.R.B.) but reduced to c. 107 on February 19th (F.E.K.). Thereafter numbers were usually under 100 until after mid-summer. Circa 215 on September 8th (G.R.B.), had become c. 500 on October 7th (M.K.T.), c. 800 by December 9th, and c. 1,050 by December 27th (G.R.B.). Ripley Lake had c. 142 on January 12th (A.F.G.W.). Fairburn Ing had large numbers as usual, with maximum estimate of c. 1,200 on January 21st, and up to c. 160 nests were counted in the breeding season; with one on June 12th holding 21 eggs, possibly the product of more than one hen (C.W., G.W.). Gouthwaite had very few in autumn, but c. 200 were at Sawley Lake in November and December (Misses M. Wray and D. Walker). Circa 800 at Fairburn on August 5th had dropped to c. 435 on October 7th (W.C.W.). Of c. 176 at Swillington Ing on October 6th only four were visible on November 21st (W.C.W.). There is much scope for careful Coot counting, recording, analysing, and summarising with several people concentrating on different waters. On February 5th some were frozen dead at Fairburn (V.S.C., I.M., G.R.E.).

129. Little Bustard (458/9).—One was shot when flying to a small pond near Aldbrough (E.R.) on November 10th (J. S. Fisher). A second was shot from barley stubble undersown trefoil near Preston, c. six miles from the Aldbrough pond, on November 20th (R. Stephenson). A. Hazelwood diagnosed the former as a first winter male of the Western race (*O. t. tetrax*) in good conditions with stomach full of a Brassica, probably turnip tops; the second as an adult female of the Eastern race (*O. t. orientalis*). The racial differentiation has been confirmed by Col. R. Meinertzhagen.

131. Oystercatcher (452).—Ringed Terschelling, Holland, on 18/7/51; Sunk Island (Humber) 12/2/53 (*British Birds*). Nests were found in Airedale (A.P., J.H.I.L.), in Wensleydale (R.C.), and in Swaledale where nine pairs bred (J.P.U.); and young were seen at all sites. Birds were seen on many dates by rivers, reservoirs, flashes, etc., inland mainly from March to August; and on the coast. Maxima at Spurn were c. 60 on January 5th, c. 40 April 7th and c. 57 on November 8th, with smaller numbers on most dates between. At Teesmouth Oystercatchers are mainly on the Durham side but cross to South Gare when disturbed; maximum near Redcar c. 150 on September 7th (D.R. and P.S.).

133. Lapwing (449).—Ringed (pull) by R.F.D. (21/6/53) Askwith near Otley; dead 26/5/56 Weston near Otley.

Ringed, pull, near Harrogate, 22/5/56; Haworth, 1/12/56 (M.R.S., A.F.G.W.).

Ringed, pull, near Harrogate, 19/7/55; North Devon, 26/2/56 (M.R.S., A.F.G.W.).

Ringed, pull, Lindley, Otley, 28/5/55; dead same place, 13/5/56 (M.R.S., A.F.G.W.).

Ringed, pull, Littondale, 10/5/53; Loch Awe, Argyle, 3/5/55 (*British Birds*).
Ringed, pull, near Pateley Bridge, 12/5/55; Talais, Medoc, Gironde, France, 18/2/56 (W.N.S.).

Ringed, pull, Fewston, 26/6/55; Co. Wexford, Eire, 1/3/56 (W.N.S.).

Ringed, pull, near Otley, 22/5/54; Santarem, Estramadur, Portugal, 21/1/56 (W.N.S.).

Ringed, pull, Ingbirchworth, 11/6/55; Melton Mowbray, 19/1/56 (J.C.S.E.).

Ringed, pull, Ingbirchworth, 18/6/55; Campos, Majorca, 12/2/56 (J.C.S.E.).

At Rishworth one sat three eggs at 1,000 feet altitude through the snowy period from April 26th with six inches of snow around her for some four days; the eggs hatched in early May (I.M.). A nest at Ilton had four eggs on July 6th (P.Y.); and a juvenile was too young to fly in Littondale on August 5th (B. Armitage).

On January 25th parties were flying west over the Dallowgill-Ilton Moors for most of the day (P.Y.); and there was a large passage S-W over Doncaster on the 31st (J.S.T.). Several parties came in from sea at Redcar and passed southerly on February 5th (D.R. and P.S.); and on February 14th *c.* 120 flew S-W over Winn Moor (J.R.G.). The severe weather passed, and on March 3rd *c.* 240 passed west up the valley at Bottomboat (W.C.W.), and by March 4th Lapwings were calling in pairs on Ilton Moor (P.Y.). Flocks of *c.* 500 at Eccup on March 18th, and of up to *c.* 2,500 at Bubwith floods on March 17th and 25th (A.F.G.W., M.R.S.), would probably pass Balticwards. On March 25th *c.* 600 passed east over Hornsea Mere in 45 minutes (M.K.T.) and *c.* 400 out to sea at Flamborough (H.O.B.).

The August concentrations included *c.* 1,000 at Bottomboat on the 25th (W.C.W.); and *c.* 1,000 in the Dearne Valley (R.J.R.) which had become *c.* 300 by the 30th, and would be British bred. After smaller parties had been noted earlier in the month, on October 28th, *c.* 623 were counted at South Gare travelling W and S-W (D.R. and P.S.). Already the concentration at Brotherton Ing had numbered *c.* 1,650 on October 21st (J.C.) when birds were also moving westward, and *c.* 1,000 were still there on December 18th, by which time many of the birds would have passed and others taken their places. On December 30th only two could be found at Brotherton (W.C.W.). There are many other records of smaller concentrations and of flocks passing, until the reduced Lapwing population of winter had been reached. The main passages at Spurn happened on October 17th and 21st (200), and *c.* 300 on the 28th.

134. Ringed Plover (435).—Ringed, South Gare, pull, 20/7/56; Le Croisie, Loire Inf., France, 19/9/56 (P.A.R.). About a dozen pairs bred at Spurn, and about three pairs at Teesmouth. Inland waters in the line where the species could be expected showed birds in spring: in the Dearne Valley, maximum 15 on May 15th (R.J.R.); Fairburn, 11 on May 10th (C.W., G.W.), and ten on May 20th (K.S.); Mickleton Flash, eight on May 13th (W.C.W.); Gouthwaite Reservoir, seven on May 22nd-23rd, and nine on June 2nd (A.F.G.W.); and one at Ilton on May 6th (P.Y.). On the Humber bank near Melton birds were present from April 15th to May 27th with 147 on April 29th, and 45 on May 13th (B.P.). At Cherry Cobb were 'hundreds' in May and many still there on May 30th. At Spurn no more than the breeding pairs were noted in May.

In autumn the Spurn maximum of *c.* 60 occurred on August 17th and September 18th; but very few were at Cherry Cob at that time. Near Melton the river bank showed 41 on August 5th, and 76 on August 12th (B.P.). At Gouthwaite there was no mud, but six were at Knaresborough S.F. on August 10th (A.F.G.W.); and at Fairburn, with unlimited freshly-uncovered mud at the Brotherton end, Ringed Plovers were present in numbers throughout August with 64 as maximum on the 26th (W.C.W.). Birds occurred in the Dearne Valley from July 15th to October 3rd (A.A., R.J.R., J.S.T.), with maximum of *c.* 20 on August 17th (J.C.H.L.). About ten were present near Melton Ponds from October 6th to December 30th (B. Pashby), but fewer at Spurn.

135. Little Ringed Plover (438).—Four or five pairs bred in one area, and another pair in an old area; whilst in a new and more distant area, where birds had been present through the spring, two chicks were seen on July 29th. Occurred in these areas from April to early September.

139. Grey Plover (444).—Occurred at Spurn from January to mid-May with maximum of *c.* 40 on April 11th; and from July to the year end with 46 on August 8th and *c.* 110 on September 5th, up to *c.* 400 on September 12th, and *c.* 120 on September 20th to 22nd. At Cherry Cobb *c.* 300 on May 11th (W.A.B.) became *c.* 185 on May 15th (H.O.B.); *c.* 80 were there on August 12th (G.R.B.). *Circa* 100 were at South Gare on September 8th and December 16th (D.R. and P.S.). As usual inland occurrences were few—single birds at Brotherton Ings on August 26th, September 23rd and 30th and November 4th (C.W., G.W.); and one at Bottomboat on October 23rd, and at Stanley S.F. on October 28th (K.S.).

140. Golden Plover (440/443).—Ringed as immature St. John's Chapel, Weardale, 21/6/55; Shot Reeth, Swaledale, 14/11/55 (N. Ridley per G. W. Temperley). At Redcar, a flock of *c.* 250 in fields on January 29th had become *c.* 60 by February 18th and were compelled by snow to take to the beach (D.R. and P.S.). Occurred at Spurn more frequently than usual up to early March (*c.* 200, February 14th), and in autumn (*c.* 320, October 23rd; and over 200 November 4th and December 15th). The considerable flocks recorded inland in spring about Doncaster, in the Dearne Valley, near Castleford, etc., show the normal pattern of increasing proportions of birds in 'Northern' plumage until late April, with a few birds in May. In autumn, *c.* 22 at Wath Ings on July 22nd, had increased to *c.* 200 by September 22nd (R.J.R.); after which larger flocks frequented several places. At Redcar remained few from August 2nd (five) to September 2nd (*c.* 80).

143. Turnstone (402).—Maxima at Spurn *c.* 50 on May 5th and 12th and September 2nd, 15th and 26th; and *c.* 75 on November 5th. At Cherry Cobb were *c.* 50 on May 11th (W.A.B.); and three, May 19th (J.C.H.L.). Occurred inland in spring; five Fairburn, May 22nd (C.E.A.), one on the 23rd (G.W., C.W.), and two on June 3rd and 5th (C.W., G.W., C.E.A.). At Gouthwaite, one, May 22nd to 24th (A.F.G.W.). In autumn, one turned over shale in the Dearne Valley on July 30th and August 4th (A.A., J.S.T.), one was at Swillington Ing on August 19th (K.S.); and one at Fairburn on July 26th (J.D.P.) and 28th (W.C.W., and C.W.).

145. Common Snipe (395).—Drummed near Ilton on March 18th (P.Y.). Sixty-four were at Wath Ings (A.A.), and at Fairburn, on September 30th (R.J.R.); where *c.* 100 flew in to settle in a reed-bed on September 6th (C.E.A.). Very numerous at times during August and September on Marishes (Pickering) floods (R.M.G.).

147. Jack Snipe (398).—Noted on various dates up to April 29th (one at Rudland T.E.D.) at eight places in spring, and 11 places in autumn. The first of autumn were four at Spurn and four north of Kilnsea on October 7th.

148. Woodcock (393).—Four eggs were found in a nest near Carperby on April 2nd (G.E.A.); and four in a nest in Londesborough Park on August 16th which had hatched on the 18th (T. Swift in *The Field*). Single birds at Spurn on October 6th, 26th, November 15th, 17th, 18th, and two on October 28th, and two in a ditch at Ossett on October 28th (A.F.). One at South Gare on October 27th, one at Redcar on November 24th (D.R. and P.S.), and one on Ilton Moor on November 12th that was evidently very tired (P.Y.), were all fairly sure to be immigrants.

150. Curlew (388).—Ringed as pull. Ingbirchworth, 18/6/55; near Ardilly, Charente-Maritime, France, 25/9/55 (*British Birds*). Ringed near Bolton Abbey, 22/6/56; Overton Marsh, Morecambe, on 16/12/56. Ringed near Harrogate, 21/7/54; near Padstow, Cornwall, 8/2/56 (A.F.G.W.). *Circa* 220 were at Cherry Cobb on April 29th (G.R.B.); and *c.* 1,000 on September 3rd and 4th (B.P., H.O.B.). Always present at Spurn with maximum *c.* 50 on March 22nd and 23rd, and minima from April 4th to June 30th. Up to *c.* 75 present at Gouthwaite in the winter months at both ends of the year (A.F.G.W.).

151. Whimbrel (389).—At Spurn the first appeared on May 1st, and up to three occurred on many days to mid-June. Up to July 14th occurrences were spasmodic, almost daily until mid-September, with the last on October 26th. The maximum was *c.* 40 on August 5th. Up the Humber Whimbrels occurred on several dates from April 29th (one at Cherry Cobb, G.R.B.). The species was noted also in May at Southfield Reservoir (R.J.R.), Ilton Reservoir (P.Y.); and at Marske on May 19th and Wilton on the 12th (D.R. and P.S.); and Redcar on June 14th. There were ten inland occurrences in July to September and several at Cherry Cobb. Ten came off the sea at Easington on July 18th (H.O.B.).

154. Black-tailed Godwit (387).—One was at Bubwith Ings on April 8th (H.O.B.), and at Fairburn on May 1st (K.S.). Eight at Wath Ings (Dearne Valley)

on August 18th were seen clearly (R.J.R.). One was seen at rest and in flight at Brotherton Ings on October 21st (W.C.W., G.W., J.C.).

155. Bar-tailed Godwit (386).—Present at Spurn from January to April 6th and on 10th and 11th, with maximum of *c.* 200 on March 21st. Odd birds occurred on most days from early August, but no numbers until November 24th and maximum thereafter *c.* 160 on December 23rd. Up to *c.* 40 were at Cherry Cobb in mid-May, and two on the 30th (J.C.H.L.). There were *c.* 150 at South Gare on September 8th and *c.* 100 on December 16th (P. and D.R.S.). One was at Fairburn on August 12th (A.F.) and two on September 3rd (C.E.A.).

156. Green Sandpiper (424).—Recorded by seven inland waters from January to May; and from June 17th (Leven); after which the species occurred by many still and flowing waters in all Ridings until September 30th, and afterwards one at Wath Ings on October 28th (J.B.H.) and December 18th and 23rd (J.C.H.L.); and one at Knostrop S.F. on December 9th (A.H.B.L.); and near Melton from October 6th to November 25th (B. Pashby).

157. Wood Sandpiper (423).—The species occurred much more frequently again than a few years ago, viz.: in spring by Hornsea Mere on May 18th (G.R.B., M.W., M.K.T.); two, Knaresborough S.F., May 24th (J.R.M., J.A.S.B.); at Fairburn on May 20th to 24th (K.S., C.E.A., G.C.); and on June 5th (C.W.); at High Royd on May 27th (J. M. Ridsdale); and one in the Dearne Valley on May 19th to 20th (J.C.H.L., R.J.R.). One was at Settle S.F. feeding with Dunlins on June 26th (A.P.). The floods at Marishes (Pickering) attracted eight on August 27th; and two still there on the 29th (R.M.G.). Fairburn had two on July 14th to 16th (Mrs. E. G., G.W., A.G.); and on August 21st (K.S.); with one on the 12th (J.C.) and 28th (C.W., G.W.). W.C.W. flushed one at Bottomboat on August 19th. One was at Cherry Cobb on September 3rd; and near Thorngumbald on September 3rd and 4th (H.O.B., B.P.). Recorded at Spurn, up to three, from August 22nd to 29th, with odd birds on August 12th and 14th; and one seen frequently in the Canal Zone to September 30th and on October 8th. One was caught and ringed on August 26th.

159. Common Sandpiper (421).—The earliest were three at Gouthwaite Reservoir (R. Gill), and one at Ogden Reservoir (C. W. per I.M.), on April 9th. Swillington Ing is well away from the hills but a nest with four eggs was found in grass on July 3rd (K.S.); on July 16th, 16 were there (W.C.W.). A late bird was at Denaby Ings on September 24th (R.J.R.); and one over Huddersfield, October 1st (E.C.J.S.). Occurred at Spurn in spring, one on April 26th; and on most days from July 8th to September 11th and one on the 25th; 20 were recorded on August 19th. At Hornsea Mere occurred from May 6th to 22nd; near Brough on May 3rd (S.M.); and in a number of East Riding places from July 18th. Eleven at Easington on August 19th (L.S., H.O.B.); and ten at Hornsea Mere on September 11th (M.K.T.) were unusual.

161. Redshank (428/30).—Cherry Cobb Sands showed *c.* 230 on April 29th (G.R.B.); *c.* 400 on August 12th, September 22nd and 23rd (G.R.B.); and *c.* 250 on September 4th (B.P., H.O.B.). The maximum at Spurn for the early months was *c.* 100 on January 22nd, and maxima for autumn *c.* 300 on August 16th, *c.* 500 on September 15th.

162. Spotted Redshank (431).—Occurred in spring in the Dearne Valley, April 28th-29th (J.C.H.L., A.A., etc.); one in breeding dress at Cowton Bottoms on April 22nd (A.B.); and two in summer plumage at Worsborough Bridge Reservoir on April 27th (A.A., D.S.). The species was unusually frequent in autumn with birds in the Dearne Valley, Knaresborough S.F., Marishes floods, and the Fairburn area on dates from August 13th to October 28th, when two were at Wath Ings (J.B.H., G.F.K., A.A.). Four were in the Dearne Valley on September 30th (J.C.H.L., J.B.H., A.A., R.J.R.). Single birds were at Cherry Cobb on two days of August and on September 29th (A.H.B.L.), and at Patrington Haven on August 8th-10th (A.C., H.O.B.). At Spurn one occurred on January 5th and February 13th (R.F.D. and others), August 17th and 19th (two), one on September 26th.

165. Greenshank (432).—Occurred in spring at Patrington Haven on April 29th and May 10th (A.C.); and at Spurn on April 27th (J.C., H.G.B.) and May 8th (R.C.)—three in the roll-call for May 22nd were not referred to in the log. The next was recorded at Dewsbury S.F. on June 15th (W.C.W.) and could be a belated straggler or the first to come south. From June 24th (three at Fairburn (K.S.)), the species was recorded on many days in 21 areas in small numbers, maximum reported being eight at Fairburn on September 2nd (W.C.W.). Late birds were

one at Swillington on October 21st and one at Fairburn (C.W., G.W.); one at Gouthwaite from November 10th to 29th (A.F.G.W., M.W.); and one in the Dearne Valley from October 2nd (J.C.H.L.) to December 2nd, and 23rd, which was still there on 4/1/57 (A.A.).

Occurred at Spurn daily from early August until mid-September (maximum ten on August 21st and 23rd) and intermittently until October 15th, with single birds recorded on November 6th (D. P. Bell, E.C.S.) and 16th (J.C.).

169. Knot (403).—At Spurn *c.* 7,000 was the estimate for January 1st (G.C., C.E.A.); *c.* 5,000 on February 13th, *c.* 1,000 March 21st and 27th to 30th; *c.* 700 flew to E or N-E in several flocks on March 30th and were watched out of sight (J.C.); after which numbers fell, with none from May 23rd to July 8th. In autumn, the species was usually present but sizeable flocks were intermittent until mid-November, maximum *c.* 5,000 November 24th and December 16th. At South Gare were *c.* 3,000 on December 16th (D.R. and P.S.). A few occurred inland on the mud of Brotherton Ing on various dates from one on June 5th (C.W., G.W.) to two on November 18th (R.F.D.) and one, Fly Flatts Reservoir, August 25th (R.Cr.). *Circa* 50 at Cherry Cobb on July 25th (H.O.B.) was unusual. A Knot ringed Revtangen, Rogaland, Norway, as adult on 3/9/49 was at Teesmouth 2/2/54 (*British Birds*).

170. Purple Sandpiper (415).—Winter status normal. Thirty-nine were at Bridlington on April 29th (S.M.); and one at Spurn on May 8th (R.C.), November 4th (J.C.).

171. Little Stint (407).—Occurred at Fairburn, two on June 3rd and 10th (C.W., K.S.); and one on August 26th (C.W.) and two on September 16th (B.A., J.C., G.W., C.W.). At Knaresborough S.F. was one on August 24th and two on the 26th to September 6th (A.F.G.W.). At Wath Ings up to six occurred August 28th to September 8th (A.A., J.C., H.L., J.S.T., F. Horner). At Cherry Cobb, one on August 21st and September 6th and two on the 3rd (L.S., H.O.B., B.P., A.C., W.A.B.). None at Spurn.

173. Temminck's Stint (409).—One was at Spurn on August 19th and 20th (G.R.E. and R.S.P.B. party).

178. Dunlin (404/5).—Proved to breed on several moors. A few occurred by many more inland waters than are named below, mainly in summer to autumn. The peak periods of spring and autumn coincided with those of Ringed Plover at waters where most were recorded. Spring peaks were: Dearne Valley, *c.* 24, May 12th to 13th (J.C.H.L.); Fairburn, eight, May 10th (C.W.); at Gouthwaite, *c.* 22, June 2nd (A.F.G.W.); at Cherry Cobb, *c.* 1,000 on May 15th (H.O.B.); and on May 12th at Spurn Dunlins increased suddenly to *c.* 900. In autumn were: Dearne Valley, *c.* 28 on July 30th (A.A.) and numbers remained high (*c.* 30) from August 17th (J.C.H.L., R.J.R.); Fairburn, *c.* 30, July 30th, and *c.* 65, August 1st, and *c.* 54, August 6th (G.C., I.C.G.) were detained probably by Brotherton mud; and *c.* 35 were still there on November 18th (R.F.D.). Cherry Cobb figures were *c.* 1,000, July 25th (H.O.B.), *c.* 2,800 August 12th (G.R.B.), *c.* 2,500 September 4th (B.P., H.O.B.). *Circa* 20 flew up Trent from Humber on July 21st (H.O.B.). At Spurn always present with minima from May 26th to July; and maxima March 22nd to 29th, September 21st to 25th, October 13th to 16th, and *c.* 1,000 November 10th and 24th; *c.* 1,600 on October 13th was never exceeded.

179. Curlew Sandpiper (406).—Three were with Dunlins in the Dearne Valley on August 25th, one being in summer plumage (R.J.R., C.I.B.), and seven on September 2nd (A.A., D.S., D.A.). One was with Dunlins (white rump seen) at Fairburn on September 1st (J.C.). Eight were on Cherry Cobb Sands on September 4th (B.P., H.O.B.). Occurred at Spurn on most days from August 23rd to September 10th and two on the 16th; maximum 13 on August 27th, 12 on September 8th.

181. Sanderling (416).—Small numbers occurred at Spurn on most days up to early June, but with many blanks in April (maxima *c.* 20 May 22nd, *c.* 40 June 2nd); and in autumn; maximum numbers occurred with *c.* 70 on September 28th and *c.* 160 on October 21st, most of which soon passed. At Redcar more Sanderling inhabit the beach than at Spurn; *c.* 100 on May 19th and *c.* 150 on October 28th were maxima (D.R. and P.S.). Noted inland in the Dearne Valley, one on May 5th and 15th/16th and five on May 20th (R.J.R., J.B.H.). Occurred in late July at Fairburn, 13 on July 28th and 23 on July 29th (C. Winn). Two were at Gouthwaite on May 23rd (A.F.G.W.), and one at Knaresborough on July 21st (J.R.M., J.A.S.B.).

184. Ruff (417).—Occurred in spring: one, Knostrop S.F., April 2nd (A.H.B.L.); one, Knaresborough S.F., April 14th to 17th (J.R.M.); two, Bottomboat, April 15th

(G.C.); one, Fairburn, May 13th (C.W., G.W.). In autumn up to 13 at a dozen places repeatedly in August and September with maximum of 13 on August 22nd at Fairburn (A.F.). Two were at Spurn in the Beacon area on July 13th (R.M.G., E.C.S.).

185. Avocet (451).—One seen at Cherry Cobb Sands on September 25th (M.K.T.).

187. Grey Phalarope (400).—One at Fairburn, on Fryston Pond on July 16th was in almost full summer plumage (C. Winn, A. Gilpin, A.H.B.L., E.C.S., and others).

193. Arctic Skua (493).—For skuas to be noticed off the Yorkshire coast in May was unusual. Off Hornsea 20 counted on May 18th (M.W., G.R.B.) were probably of this species; one was noted on May 19th, and three on May 20th (M.K.T.). Most were dark-phased birds. Noted on many days in July to November from Teesmouth southward—25 Teesmouth, August 19th (D.G.B.); 28 Spurn, August 19th; and 23, October 5th.

194. Great Skua (491).—Noted occasionally at Spurn; up to three October 5th to 7th (B.S.M., R.E.S., E.C.D.); and eight on October 27th (J.C.). One definite, two probables, flew north at Redcar on October 6th; and two on the 26th (D.R. and P.S.).

195. Pomarine Skua (492).—At South Gare on October 6th, of six similar-sized skuas, a pale-phase adult had the typical twisted tail (D.R.S.). Across at North Gare the same birds (+ another) were spotted, including the pale-phase adult (P.J.S., D.G.B.). An adult was at Teesmouth on October 29th (B.C.); and two immatures on November 3rd (D.G.B., P.J.S.). The 'twisted' tails of two light-phase skuas at Spurn on October 27th were seen clearly (J.C.).

198. Greater Black-backed Gull (486).—Ringed (pull) 14/6/53, Hovden, Sogne, Norway (61°43' N., 4°53' E.); at Scarborough 24/2/54 (*British Birds*, November, 1956). Great numbers roosted in the Tees Estuary in August to early September (P.J.S.). At Spurn *c.* 150 on April 2nd was the spring maximum; thereafter numbers quickly fell to a few immatures and odd adults. Numbers increased in early August to *c.* 300 on the 10th; with another peak of *c.* 350 on August 28th; a third peak of *c.* 800 on September 10th, and a fourth of *c.* 1,000 on October 14th after which numbers declined rapidly to an average of *c.* 50. B. Pashby recorded *c.* 500 on Redcliffe Sands, Humber, on November 25th. Small numbers occurred in winter about a number of waters—12 at Ripley on March 14th (A.F.G.W.).

199. Lesser Black-backed Gull (484/5).—

Ringed, pull, Farne Islands, 9/8/54; West Tanfield, 21/5/55 (*British Birds*).

Ringed, pull, Farne Islands, 10/8/53; Wath-on-Deerne, 28/6/55 (Miss G. Hickling).

Ringed, pull, Roeburndale, 7/7/51; Lorient, France, 25/3/56 (D.B.I.).

Ringed, pull, Roeburndale, 7/7/56; caught on a trawler off Aveiro, Portugal, 12/9/56 (D.B.I.).

Ringed, pull, Roeburndale, 5/7/56; Prestatyn, Flint, in November (D.A.R.).

Ringed, pull, Roeburndale, 21/7/56; Mehedia, Port Lyautry, Morocco, 31/12/56 (Wharfedale N.S.).

Ringed, pull, Roeburndale, 22/7/56; Aveiro Lagoon, Beira Littoral, Portugal, 25/11/56 (R.F.D., P.Q.).

Ringed, pull, Roeburndale, 22/7/56; Morecambe, 6/11/56 (R.F.D., P.Q.).

Ringed, pull, Roeburndale, 22/7/56; near Frome, Somerset, 7/10/56 (R.F.D., P.Q.).

Ringed, pull, Roeburndale, 22/7/56; near Lisbon, Portugal, 12/10/56.

Birds probably returning to Roeburndale occurred inland from April. An extraordinary gull concentration at Eccup on December 1st included *c.* 1,000 of this species (R.V.J.). Only small numbers appeared at Spurn.

200. Herring Gull (482).—Ringed, Vesteralen, North Norway (pull), 10/7/55; near Whitby, 13/3/56 (A.B.W.). *Circa* 300 passed westward through the Aire Gap on December 21st (D.F.W.). Considerable numbers roosted inland in the winter months. *Circa* 350 were on mud near Hessle on January 12th (S.M.). Maxima at Spurn *c.* 180 on October 25th, and *c.* 80 November 3rd.

201. Common Gull (481).—*Circa* 1,900 roosted Brough Roads (Humber) on January 17th (S.M.). Up to *c.* 200 (February 14th) occurred at Spurn in the early months; and gulls mainly of this species were passing south all day on March 30th. On April 8th considerable passage was N-W at Redcar (D.R. and P.S.). Twelve at

Ilton Reservoir on May 31st had gone next day (P.Y.). *Circa* 50 at Shadwell on July 21st (J.R.G.) was a curious record. Spurn autumnal peaks were: *c.* 480 on October 8th, and *c.* 1,000 on the 14th.

202. Glaucous Gull (487).—An immature bird was about Whitby Harbour on February 16th (A.B.W.). A sub-adult was at Hornsea Mere on April 18th (S.M.). An adult was seen with Herring Gulls along Coatham Sands on December 3rd (B.C.). [A large gull with pale-grey upper surfaces to wings, with a light bill, sized as Herring Gull or slightly larger, and with slow flight, on June 29th, seen at *c.* 40 yards range as it flew over near Wakefield, was considered to be of this species by C. E. Andrassy. In view of the unusual date it is felt that confirmatory evidence was needed.]

203. Iceland Gull (488).—A juvenile bird was seen in Scarborough Harbour on January 15th by H. M. Frost; after questioning whom, A. J. Wallis has confidence in the record and knows the observer. At Spurn on December 30th J. Cudworth had good views of a bird down to 12 yards range.

207. Little Gull (477).—An adult in North Bay, Scarborough, on February 14th (H.M.F.); and one at Semerwater on March 17th with black head and dark under-wings, with *ridibundus* present for comparison (Ian Lawrence); and one at Fairburn on May 2nd (J.C.). A juvenile was seen south of Bridlington on August 27th and 30th (J.C.H.L.). Four in a party that flew at Teesmouth on August 26th from North Gare into the river towards Redcar steel works were in second year plumage and seen at close range through a $\times 25$ telescope (B. Coates). Two juveniles passed about a mile from the South Gare breakwater on September 16th; they had been watched at *c.* 25 yards range from the North Gare (P.J.S., B.C.). At Spurn a juvenile appeared on September 8th (R.C.P., J.C.); an adult on October 27th (J.C.); and an adult followed by a first-winter bird on December 2nd (R.C.P.).

208. Black-headed Gull (478).—

Ringed as pull, 29/6/48 near Strängnäs, west of Stockholm; near Ilkley, 19/4/56 (A.G.).

Ringed as pull, near Carperby, 8/7/56; near Blackburn, Lancashire, 2/10/56 (M.R.S., A.F.G.W.).

Ringed as pull, Heptonstall Moors, 13/6/54; near Noirmoutier, Vendée, France, 15/11/55 (*British Birds*).

Ringed as pull, Llangunllo, Radnor, 20/6/55; near Leeds, 16/10/55.

Status was normal. *Circa* 1,500 were at Bubwith floods on March 3rd (C.E.K., H.O.B.). The concentration at Ecuip numbered *c.* 6,000 on November 17th (A.H. B.L.). One at Spurn, 9/10/56, lacked black on the primaries.

211. Kittiwake (489).—Status normal. Several hundred adults and juveniles were still off Bempton on September 15th (A.W., H.O.B.). Not seen frequently at Spurn, parties on the estuary side of *c.* 65 on June 16th, of *c.* 227 on mud on the 17th, and *c.* 60 on June 30th consisted largely of juveniles. Off Redcar on August 18th Kittiwakes coasted north-westerly at a rate of *c.* 400 per hour; and on the 22nd *c.* 3,000 flew S-E between 0600 and 0715 hours (D.R. and P.S.). *Circa* 2,100 were moving north at Spurn on October 27th.

212. Black Tern (462).—Spring records were: Dearne Valley, one on May 6th (A.A., D.A., D.S.); Fairburn, one on May 29th (K.S.). Was recorded in autumn on many days from August 6th (Spurn) to October 14th (Hornsea Mere, G.R.B.); at Fairburn, the Dearne Valley, Bubwith Ings, Marishes, Ilkley S.F., Malham Tarn (one, September 2nd, J.H.I.L.), near Bridlington, Coatham Sands, and Hornsea Mere and Spurn. Maxima were: Spurn 13 on August 11th; Fairburn 16 on September 2nd (C.W., G.W., W.C.W.). Fairburn showed Black Terns on most days from August 21st to September 9th.

217/18. Common and Arctic Terns (469/470).—Eleven were at Spurn on April 21st where autumnal peaks occurred July 21st-22nd, August 11th (*c.* 900), September 7th, October 5th; the last passed on October 15th—both species were included. Noted in the Dearne Valley and at Fairburn (20 on September 2nd, W.C.W.) in spring and autumn; at Worsborough Reservoir on June 3rd (A.A.), and at Coniston Cold four on June 5th (A.P.). In autumn at Swillington Ing, Ossett, Bottomboat, Mickleton, Southfield Reservoir, Leighton Reservoir, Ogden Reservoir, and Knotford Nook and up the Humber as far as Brough. Curious dates were July 1st—one at Summer Lodge Tarn (D.B.I.); July 15th, 11 at Lindholme (R.J.R.); and one at Blackmoorfoot Reservoir on November 3rd (J.C.S.E.). *Circa* 200 counted off Hornsea on May 18th (M.W., G.R.B.) and *c.* 400 on August 6th, indicated periods of passage northward and southward.

219. Roseate Tern (468).—One resting at Spurn with Sandwich Terns on June 17th had a black bill except for some red round base of gape especially on lower mandible, red legs; slim appearance and very long tail-streamers (B.P., R.F.D.). Of two terns with white foreheads, Fairburn on June 26th, one was definitely Common, and the other possibly Roseate. The latter bird had a black bill, red legs, slimmer build, with only slightly longer tail-streamers than the *hirundo*. Several times it picked an insect from the surface, rose, dropped the insect and re-caught it in mid-air (R.F.D., C.W.).

222. Little Tern (471).—After five on April 30th at Spurn, birds were seen daily until early August and occasionally later; the last was one on September 7th. At Redcar first seen on May 6th (D.R. and P.S.). On May 18th *c.* 180 passed north in three hours off Hornsea (G.R.B.); and *c.* 200 in four hours on August 6th (G.R.B.). The yellow bill, black-tipped was seen of one at Bottomboat on September 9th (E.G.). Absence of week-end visitors to Spurn during a wet July-August probably contributed to more successful hatching of late clutches, and to *c.* 20 young birds being reared—six were ringed.

223. Sandwich Tern (467).—Two at Redcar on April 8th were the first seen (D.R. and P.S.); and up to three had been seen there before the first appeared at Spurn on April 25th. *Circa* 110 passed south off Hornsea on August 6th (G.R.B.). Maxima at Spurn were *c.* 250 on August 10th, *c.* 200, August 11th, after which numbers dropped, then rose to a second peak of *c.* 120 on September 14th. Last recorded one on October 18th. One near the Lockwood Beck Reservoir on July 1st (M.A.) was the only inland record.

224. Razorbill (496).—First seen on Flamborough Cliffs on March 7th (A.J.W.). Auks over the sea, and even inside the Spurn estuary are often difficult to identify; *c.* 20 were recorded at Spurn on September 14th.

226. Little Auk (502).—Seventeen occurred at Spurn on October 27th and three on November 3rd. One was at Teesmouth on October 27th (D.G.B., P.J.S.); and one at Bottomboat on the same day was watched as it swam and dived in the Calder down to a range of four feet (W.C.W., Ian Lewis).

One picked up in Crescent Avenue, Whitby, on January 9th following a gale on the 8th, was released at sea (A.B.W.). One was dead at Redcar on January 28th (D.R.S.). One was at Filey on February 19th (H.M.F., T.M.C.). One was found dead at Barmston on March 31st (J.B.H.), and remains of one at Hornsea Mere on January 22nd (G.R.B.). The Humber Wildfowl Refuge Committee reports one east of Faxfleet on January 31st.

227. Guillemot (498/9).—On the Flamborough Cliffs by March 7th (A.W.). The W.B.P. Act is benefiting this species. First layings were successful and simultaneous; and young were on the ledges in increased numbers at the period when adults are present in maximum strength and so have greater protection from predators (mainly Herring Gulls) than have later layings (H.O.B.). Birds found dead at Spurn on September 29th, and at Hornsea on February 25th (M.K.T., A.H.), were of the Northern race, as were some of the many affected by oil in early April at Teesmouth (D.R. and P.S.).

230. Puffin (503).—At Flamborough by March 7th (A.W.). An auk at Fairburn on September 9th showed vertical stripes on a blunt bill as it flew past (K.S.).

232. Stock-Dove (381).—A nest held eggs near Masham on March 25th (P.Y.).

234. Wood-Pigeon (380).—Ringed as pull, Blagdon, Northumberland, 30/9/51; near York, 11/2/55. *Circa* 1,000 wheeled about prior to roosting near Harewood on October 21st (A.H.B.L.). A few were recorded on odd days at Spurn, with ten on August 21st as maximum. On December 9th *c.* 20,000 came from east to the Hornsea Mere Woods and 'appeared to be an influx' (M.K.T., R.W.D.).

235. Turtle Dove (383).—One seen and heard in Mulgrave Woods near Whitby on April 2nd (T. W. A. Wood). The next were at Spa Sewage Beds on May 1st (C.E.A.), and at Riffa (H.M.), which were still early. Nine at Spurn on June 2nd, three on the 3rd and six on June 4th were all of spring. The remaining Spurn records consisted of ones on July 9th and August 17th and 12th. One near Knaresborough on September 23rd was the last (C. Webb).

237. Cuckoo (240).—The first occurred near Harrogate on April 21st (J. W. Rimmington), and the last at Askham Bryan on September 8th (R.F.D.). Ringed Spurn, 16/5/55; Pavia, Italy, 15/8/56 (45.12 N., 9.09 E.).

- 241. Barn Owl** (254).—Pull-ringed near Sheffield, 16/7/54; Epping Forest, *c.* 24/3/55 (*British Birds*). Many records of individual birds but no evidence of change in status.
- 246. Little Owl** (249).—Pull-ringed, Goxhill, Lincs., 18/6/54; Handsworth, Sheffield, *c.* 2/6/55 (*British Birds*). At least three knocked down by cars in York area (B.D.). One recorded at *c.* 1,000 feet, Slaidburn area (G. H. Acklam).
- 247. Tawny Owl** (253).—A nest with two young near Bridlington on May 14th, held a headless adult Magpie; the hind legs of a leveret had previously been found in it (J. B. Short).
- 248. Long-eared Owl** (250).—Nested east of Doncaster, where seven were disturbed from conifers in a dozen yards on January 21st (J.S.T.). In a nest near Allertorpe three added eggs were left after the young flew (B.D.). Occurred at Spurn, October 4th, 27th and 31st to November 3rd.
- 249. Short-eared Owl** (251).—Seen from time to time at Spurn, January to April and August to year-end. One flew in high from sea on October 27th. Two were seen in display flight near Gouthwaite on April 21st (I.D.). Individual birds were reported in spring-summer from Widdop Moors, Stocks Reservoir, Ogden Moors and Greenhow; and in winter from Blackstone Edge, Ilton, Bampton Cliffs, and Gouthwaite and Stocks areas.
- 252. Nightjar** (227).—Occurred at Spurn on August 19th. Records were few and only three referred to breeding, on Langwith Common, near York (F.E.C.); and near Helwath Beck (F.C.R.) and Lockwood Beck (P.J.S.).
- 255. Swift** (225).—First reported over Mexbro Ings on April 24th (F. Horner) and at Harrogate S.F. (N.) on April 28th and 30th (A.F.G.W.). In autumn out of a number of September records, the latest was two over Doncaster on September 23rd (J.S.T.); one at Sleights on the 20th (A.B.W.), and two at Spurn on the 28th making slow progress south against a strong wind (R.C.). Spurn had few in spring except for *c.* 270 passing south on June 2nd; unless *c.* 500 that passed south on July 1st were also part of the spring passage! Large numbers circled and drifted north against wind at Flamborough on July 22nd (H.O.B.). The passage south of *c.* 570 at Spurn on September 7th was most unusual, as were so many occurrences elsewhere in September. At Redcar all spring passage was coastal and N-W; and was mainly so in autumn, except when winds were from S to S-E, as on July 15th, August 5th, and September 6th when *c.* 30 flew south between 0635 and 0720 hours (D.R. and P.S.).
- 258. Kingfisher** (234).—Reported from many usual localities, but S.L. thinks numbers down in Airedale above Bradford.
- 261. Hoopoe** (232).—One among dunes between Redcar and Marske on April 29th (D.R. and P.S.).
- 263. Great-Spotted Woodpecker** (236/7).—At Sandal Beat (near Doncaster) on February 4th, one pulled oak-apples from slender twigs and carried them to an old tree to split open (A.E.P., J.B.). One caught at Spurn on October 17th was of the British race from bill (R.C.).
- 264. Lesser-Spotted Woodpecker** (238).—Noted in many wooded localities. A cock bird fed young in Duncombe Park (P.J.S.); where both male and female were seen drumming (C.D.M.). Both male and female fed young in Saltburn Woods on different evenings (A. Lynn per P.J.S.).
- 265. Wryneck** (239).—At Spurn, one on August 29th; and daily up to three from September 2nd to 9th.
- 271. Woodlark** (69).—Bred in the Doncaster area, where two pairs laid 24 eggs at three attempts and only one reared four young; the weather was responsible for the failures (J.S.T., R.J.R.). Males were heard singing elsewhere but none reported from the East Riding. Two were at Spurn on December 2nd.
- 272. Skylark** (70).—At Spurn *c.* 50 February 13th and *c.* 40 March 23rd were maxima until September 21st (*c.* 250), and October 9th (250) to 21st, with *c.* 380 on the 10th as maximum. There was constant southerly passage at Fairburn on September 30th (E.G.). Over Doncaster, movement first noted on September 6th became 'a steady flow' towards the end of the month; with rushes in October (*c.* 40 in 30 minutes on October 12th, and on October 20th *c.* 60 in two hours)—direction was variable, but movement north-westerly was noticeable over neighbouring country on October 13th and 27th; with a few still passing in mid-November (J.S.T.). At Redcar passage was coastal N-W on October 7th, 14th and 21st (peak) (D.R. and P.S.). There was passage up the Aire at Fairburn on October 7th, 28th

and November 4th (W.C.W.). F. W. Bond reported he only saw Skylark on April 30th on the high slopes opposite Buckden, being all seen in a week in that part of Wharfedale (*vide* p. 64 in *Yorkshire Birds*).

273. Shorelark (72).—Seven near Crown and Anchor on February 14th (C.E.A., A.F.). One at Spurn, April 11th; one Sammy's Point, October 28th; two Spurn November 3rd, three November 4th, and probables November 15th and December 1st.

274. Swallow (220).—Ringed near Scarborough, 23/8/54; Luisa, Belgian Congo, 2/12/54 (*British Birds*). First seen Fairburn, March 25th (C.W., G.W.); and Skelton, York, March 31st (C.W.F.H.); and next at Farnley Lake on April 7th (Otley N.S.). Many others appeared inland before the first at Spurn on April 18th, following which the peak of spring came, May 6th to 8th, with *c.* 1,200 on the 7th, when birds passed southward, and a very few northward during most of the day. North of Spurn at Eastington on May 6th passage was south; but a few miles farther north again at Holmpton as many passed north as south (R.C.). T. W. A. Wood believes Swallows come up the Esk in spring from the coast. The spring peak at Redcar came on May 6th, coastally N-W (D.R.S., O.C.H.)—where did the coastal stream begin? The autumnal peak at Spurn came September 6th (*c.* 1,500) to 8th (*c.* 4,650) passing south. Swallows at Redcar on the 6th coasted S-E (D.R. and P.S.). At Hornsea on August 20th at mid-day Swallows passed south at a rate of *c.* 3,000 in an hour (M.K.T.); but at Spurn only *c.* 200 were recorded. *Circa* 750 came to Fairburn towards dusk on September 23rd (B. Armitage). Late birds occurred at Spurn on November 8th and 11th; and inland at North Ferriby on October 26th (J.E.S.W.).

276. House-Martin (222).—One on April 11th at Fairburn was the first (J.D.P.). Did not appear at Spurn until May 4th (Redcar, May 1st) when Swallows were passing numerously; *c.* 135 on June 2nd was not reached again. There were a number of late occurrences: November 10th, *c.* 20 at Ruswarp (E.G.); November 11th, one coasting south at Filey (I.G.B., R.Cr.); two, Leeds, November 4th (J.R.G.); two, November 10th at Collingham (H. E. Adamson); all later than the last at Spurn on October 28th.

277. Sand-Martin (223).—First recorded Winterset, March 25th (G.C.), and last inland Wath Ings, September 30th (R.J.R.). At Spurn first on April 21st moving south; and at Redcar one coasted N-W on the same day. Last at Spurn on October 21st; maxima *c.* 30 on May 8th and *c.* 66 September 8th. Heaviest passage Redcar on May 6th (D.R. and P.S.). Knaresborough S.F. had *c.* 1,000, July 17th (J.R.M.), when numbers at Fairburn had increased by 8 p.m. to *c.* 3,000 (K.S.), and where there were other concentrations of *c.* 800 on July 28th (W.C.W.) and *c.* 1,000, August 28th (K.S.). J.R.M. and J.A.S.B. ringed a total of 1,301 Sand-Martins.

279. Raven (1).—Possibly bred; but one pair had two layings taken (H.W.B.). Four were seen together on Baugh Fell on September 25th (H.W.B.); and single birds were reported from other hilly areas—three Ilton Moor, November 5th (P.Y.).

280. Carrion Crow (3).—At Spurn on March 21st parties of up to *c.* 20 passed down at intervals in the morning (G.R.W., F.W.G.H.).

281. Hooded Crow (2).—At Spurn up to seven on most days to April 8th; last seen one on May 13th. In autumn a few from October 13th, but nine on November 4th was the only record of more than three. On Osmotherley Moor on May 7th four 'Hoodies' systematically quartered ground burnt on the previous day and still smouldering, presumably looking for abandoned nests (J.P.U.). Recorded as far west as the Dearne Valley, February 12th (A.A.); and Thrybergh Reservoir on December 18th (J.C.H.L.).

282. Rook (4).—Ringed (pull) Giethoorn, Overijssel, Holland, 5/5/49, recovered Selby, -2/50. Ringed same place, 4/5/49; Cawood, 4/4/50 (*British Birds*, November, 1956). A census within eight miles of Huddersfield Town Hall gave 2,388 breeding birds (Huddersfield N.S. per J.S.).

284. Magpie (7).—Parties of *c.* 80 in stubble near Fixby on November 14th (E.C.J.S.); and of *c.* 35 near St. Ives on December 9th (D.F.W.) were large.

288. Great-Tit (98).—Near Dalton-on-Tees nested in same hole in ash as Tree-Sparrow, both species feeding young at same time.

289. Blue-Tit (100).—One ringed, Masham, 11/9/51; re-trapped there 15/8/56 (R.C.). One ringed, Roundhay, 9/5/52; and re-trapped 18/11/56 was adult when ringed (R.V.J.). Flocks of *c.* 20 in a bush at Redcar (D.R. and P.S.), and of *c.* 25 in the tops of birches at Chevet on April 4th (C.E.A.), were unusual.

290. Coal-Tit (102).—One at Spurn, October 16th.

293. Willow-Tit (108).—Bred, Golden Acre Park, Leeds (J.A.). Recorded in Harrogate area; and one ringed Knaresborough S.F., August 23rd (J.R.M.). Noted in the Allerthorpe and Hatfield areas as usual.

296. Nuthatch (96).—Two pairs watched during four weeks in December on the Yorkshire side of the Ribble near West Bradford (H. Holgate); where seen in September, 1945. A pair in Birks Wood, Buckden, in late April (F.W.B.) was getting well up the dale.

298. Tree-Creeper (93).—One, Spurn, August 21st.

299. Wren (213).—Increased at Spurn in first half of October; maximum 11 on the 14th.

300. Dipper (218).—One ringed, Linton-in-Wharfedale, 14/4/50, was caught 1/4/56 at a nesting-site two to three miles from where ringed (I.A. per R.F.D.).

301. Mistle-Thrush (174).—Just after the hay was cut on Naburn Ings on 25/7/56 large flocks of Mistle-Thrushes gathered to feed on the ground. They behaved like Fieldfares except that a flock when disturbed lacked cohesion (E.W.T.). *Circa* 80 passed south over Ilton in an hour on September 18th with steady flight (P.Y.).

302. Fieldfare (173).—Pull-ringed, Sundsvall, Västernorrland, Sweden, 27/6/50; recovered, Lasingham, -/3/51 (*British Birds*, 1956). The latest was at Spurn on May 6th; and inland at Bankfield on May 2nd (S.L.). Flocks of *c.* 50 and *c.* 80 on August 22nd near Swinton, South Yorkshire, were identified by calls (F.H.) probably correctly; three at Wheldrake on August 26th were identified by calls and plumage (B.D.); noted Esholt, September 9th (L. Magee); *c.* 30 flew south over Ilton on September 19th (P.Y.). Numbers in the eastern side of the county in autumn were much below normal; but *c.* 1,000 were at Farnley on December 11th (P.B.), and at Halfpenny Moor on November 24th (G.R.P.). Spurn had very few with maximum of up to *c.* 60 October 15th-16th.

303. Song-Thrush (175/7).—Ringed as adult, Thornaby-on-Tees, 15/9/55; Port Seton (East Lothian), 2/2/56 (P.A.R.). Ringed, Farnley Park, 8/5/54 as young; dead near Pool, 28/4/56 (D.B.I.). Ringed, Spurn, 14/8/55; Saltfleet, Lincs., 21/2/56. Ringed, Strom, Jamtland, Sweden, 18/6/51; Leyburn, -/11/51 (*British Birds*, 1956). Maxima at Spurn indicating passage were: 15 on February 18th, and 20-25 daily from October 15th to 17th. At Redcar passage was evidenced October 9th to 10th (D.R. and P.S.); and on October 7th the species was numerous about Fairburn—Swillington—Bottomboat (W.C.W.).

304. Redwing (178/9).—*Circa* 50 on January 14-15th, and parties totalling *c.* 80 on January 22nd, came in from sea at Hornsea (G.R.B.); on February 8th parties passed westward up-river along the Hull waterfront (G.R.B.). Little was seen of the species during the cold spell that followed. The last bird noted was at Rossington on April 28th (R.J.R.). In autumn nine were at Driglington on October 4th (D.A.R.); and *c.* 100 on the moors above Masham on October 6th were P.Y.'s first. Reports of Redwings inland, October 6th to 10th, were numerous and widespread; but few were noted on the coast. The main Spurn passage came October 14th to 16th (maximum *c.* 700 on the 15th), with few inland records for the period; but hundreds were near Chevet on November 25th (E.G.). Generally, as with Fieldfare, the 1956-57 winter has shown fewer than usual, birds appeared to pass westward. Could there be some connection with the hundreds of tons of hips now collected?

307. Ring-Ousel (182).—At Spurn, one, March 28th-29th; and one, October 15th-16th. The first sang near Rishworth, Halifax, on March 7th (I.M.) and one at Gorpole on the 21st was the next (J. Crossley). A pair on Rombald's Moor, whose young J.K.F. ringed 10/6/55, had themselves both been colour-ringed as young in different nests in the same area in June, 1954 (J.C.L.).

308. Blackbird (184).—

Ringed, hen, Ossett, 31/1/56; Gosforth, Cumberland, 17/11/56 (A.F.).

Ringed, male, I. of May, 6/10/49; Normanton, 19/3/55 (B.B.).

Ringed, ad. male, Scarborough, 8/2/54; Seascale, Cumberland, 20/11/55 (B.B.).

Ringed, Old Colwyn, Denbighshire, 17/3/55; Ryhill, Wakefield, 28/3/55 (B.B.).

Ringed, juv., Ilkley, 17/6/56; Appleby, Westmorland, 3/9/56 (W.N.S.).

Ringed, ad., Ilkley, 25/4/55; Great Ashby, Appleby, Westmorland, 22/4/56 (W.N.S.).

- Ringed, 1st, W.M., Gouthwaite, 22/9/56; Clachan, by Tarbet, Argyle, 11/11/56 (E.S.S.).
- Ringed, ad., Spurn, 6/11/54; Ripponden, Halifax, early/1/56.
- Ringed, hen, Spurn, 18/10/55; Hinckley, Leicestershire, 2/1/56.
- Ringed, male, Spurn, 20/10/55; near Irvine, Ayrshire, 12/3/56.
- Ringed, male, Spurn, 29/10/55; Tuam, Co. Galway, Eire, 22/2/56.
- Ringed, hen, Spurn, 18/10/55; Gigon, Asturias, Spain, 22/2/56.
- Ringed, hen, Spurn, 4/11/55; near Cleethorpes, Lincs., 24/2/56.
- Ringed, hen, Spurn, 23/10/55; Stranraer, Wigtownshire, 27/3/56.
- Ringed, male, Spurn, 23/10/55; Dublin, 6/4/56.
- Ringed, male, Spurn, 6/11/54; Pallaskeary, Co. Limerick, 10/4/56.
- Ringed, juv., Spurn, 7/6/54; Welwick, East Riding, 1/4/56.
- Ringed, ad., Spurn, 6/11/54; Frederica, Jutland, 4/7/56.
- Ringed, male, Spurn, 7/4/55; Bannow, Co. Wexford, 20/2/56, released and Cleethorpes (dead), 3/6/56.
- Ringed, male, Spurn, 8/10/55; Isle of May, 26/4/56 (released).
- Ringed, hen, Spurn, 24/10/55; Lunner Herred, Opland, Norway, late/7/56.
- Ringed, Spurn, 6/11/54; Hollingstead, near Heide, Holstein, 31/3/56.
- Ringed, male, Spurn, 18/10/55; near Strand, Rogaland, Norway, 23/10/55.

A nest held eggs near York on October 13th (E.W.T.). At Spurn, March 28th to April 3rd has most birds in spring with *c.* 25 on April 2nd. Periods of passage in autumn were: October 6th to 8th (up to 50), October 15th to 18th (up to *c.* 150), October 26th (*c.* 250) to 28th; and October 31st to November 4th (up to 50). On October 27th 2+20 dropped to South Gare from very high; and between 1500 and 1600 hours 87 more came in from north flying high and strong (D.R. and P.S.). On the 28th bushes in the Redcar dunes held many, and 12 came in low over the sea, almost exhausted. On November 15th, *c.* 10 came in from sea in early morning (D.R. and P.S.). At Flamborough were *c.* 50 on October 21st (A.W.). Scores were at Ossett Spa S.F. and near Chevet on November 24th-25th (G.C., E.G.).

311. Wheatear (186).—First recorded Luddenden Valley, March 25th (C.R.S.), when the first also appeared at Spurn. Latest, Ilton Moor, October 19th (P.Y.) and Spurn, October 24th. Twenty on Fairburn Slag on April 14th (R.F.D.); *c.* 35 on the Humberside from Cherry Cobb to Stone Creek on April 29th (G.R.B.), were notable. Three of five at Ossett S.F. on May 17th were believed of the Greenland race (A.F.). Numbers at Spurn reached a maximum of *c.* 30 on May 19th. Up to seven appeared near Redcar in the period from May 3rd to 17th (O.C.H.). Always at Spurn, July 21st to mid-October, maxima *c.* 30, August 12th; *c.* 40, August 29th; *c.* 20+, September 4th to 7th, up to *c.* 50, September 24th to 26th.

317. Stonechat (198).—At Spurn on a few days January to mid-April; and on most days from October 8th; maximum eight on October 10th. At Fairburn, one, January 21st (D.A.R.) and March 4th (R.F.D.); near York, one on Tilmire, September 26th (E.W.T.).

318. Whinchat (197).—One at Bingley Bog on April 15th was the first (S.L.); the last was near Bentley on September 29th (R.J.R.). Up to three at Spurn, May 5th to 13th; and usually present August 9th to October 2nd (last), with maxima from September 3rd to 12th (*c.* 30 on the 10th).

320. Redstart (201).—March 31st was a very early date for a male at Harewood (A.H.B.L., R.V.J.); the next was near Doncaster on April 14th (R.J.R.). Up to three occurred, Spurn, May 5th to 13th; one was there on July 8th but no other until August 15th, then almost daily until the last on October 12th. The largest numbers came September 24th to 25th (25 recorded).

321. Black Redstart (202).—Ringed, Spurn, 9/10/56; Gigon, Oviedo, Spain, 2/11/56. Present at Spurn on four days in March and four in April and on May 3rd, probably four birds involved. No more until two, October 9th, *c.* ten, October 15th and all had gone by the 22nd.

322. Nightingale (203).—Heard near Doncaster in May (J.S.T.), and near Seaton Ross (B.D.); and by many people near to Ampleforth College (W. Welstead). One or two other reports were unconfirmed.

324. Bluethroat (205).—One caught at Spurn on September 3rd.

325. Robin (207/8).—One colour-ringed at Wakefield, February, 1953, was re-trapped 12 times to 12/1/57 (C.E.A.). Five at Spurn on October 9th was the highest number recorded in the year.

327. Grasshopper-Warbler (145).—There was an unusually large number of records of reeling birds from all three Ridings. Occurred at Spurn, April 22nd to 27th (two on the 26th); and on September 20th and 24th.

333. Reed-Warbler (149).—Occurred at Spurn, one on August 25th, September 9th-10th, and on the 23rd. One in a hedge near Doncaster was almost exhausted on April 21st. Singing heard from various colonies in the south, east, and centre of the county.

337. Sedge-Warbler (153).—April 22nd at Hornsea Mere (R.W.D.) was the earliest date. One was at Lindholme Lake on October 6th (J.S.T.). At Spurn from May 5th (maximum eight on the 20th). Only occurred on a few days in autumn with last on September 10th.

343. Blackcap (162).—Noted at Swinton on April 22nd (E.E.J., R.F.D.). At Spurn, singly on May 2nd, 5th, 10th, 21st; in autumn on September 7th, and most days 15th to 27th (two on 16th, three on 26th). A female wintered at Sleights, fed at a bird-table daily to March 10th on crumbs, cheese, seed, etc., especially fond of currants (A.B.W.).

344. Barred Warbler (159).—None at Spurn. One in R.C.'s garden at Masham on September 4th, just before a big storm, was very tired, perched on the raspberry canes before the trap and was easily driven in. It measured $6\frac{3}{8}$ inches total length, with a wing measurement of 85 mm. The wing-formula conformed to that stated in the Handbook. It was a young bird with brown eyes, and white and buffish-white underparts. This is the first inland Yorkshire record for the species. Possibly it came inland at Teesmouth. Early on the next morning it was much more lively.

346. Garden-Warbler (161).—Two were near Masham on April 20th (E.E.J.). At Spurn, one on May 22nd and 30th; and on August 12th, and six on September 2nd, and recorded on most days to October 11th (four, September 25th).

347. Whitethroat (163).—Ringed, High Royd, 19/8/56; Lugo, N. Spain, 13/9/56. Ringed (pull), Harrogate, 11/6/56; Braganza, Portugal, end/8/56 (M.R.S., A.F.G.W.). First, April 22nd, Broomhill (R.J.R.); last, Blaxton, September 29th (R.J.R.). At Spurn from May 2nd daily to September 26th, with one on the 29th and October 3rd. Peak records were: May 21st to 23rd, *c.* 35-40; August 21st, *c.* 30; and August 25th, *c.* 35. Numerous around Fairburn on August 26th until 2 p.m. when rain stopped (W.C.W.).

348. Lesser Whitethroat (164).—At Spurn, two on May 6th; and in autumn 14 on 11 days from September 3rd to October 10th. Reported from 11 areas; but less numerous than last year at Roche Abbey (R.J.R.); is the species declining?

354. Willow-Warbler (132).—A pale-legged leaf-warbler was at Gouthwaite on March 25th (P.J.S.); and one near Pool, legs kept hidden but with fawn-brown feet, on December 16th; both were thought to be *trochilus* (H.M., H.L.S.). One was at Roundhay Park on April 5th (R.V.J.). At Spurn, one on April 21st, 26th and May 2nd; and then daily to May 22nd (maximum 20 on the 5th). In autumn almost daily from August 5th (maximum 25, August 19th) until October 10th.

356. Chiffchaff (129).—First recorded March 31st at Harewood (R.V.J., A.H.B.L.). None recorded at Spurn in spring; in autumn two and three on September 26th and 27th, and odd birds on 11 days from October 7th to November 4th, some probably not of the British race.

357. Wood-Warbler (135).—At Hackfall Woods by April 21st (E.E.J.); and one at Fixby, September 14th (E.C.J.S.).

364. Goldcrest (126/7).—Single birds at Spurn on April 5th and 16th. Recorded on most days from September 11th to November 4th (three), maximum *c.* 40 on October 16th. Plentiful near Buckden in late April (F.W.B.). Up to *c.* 20 in woods at Eccup, Harewood, and Farnley all the year (D.B.I.). The usual autumnal increase in Eccup conifers noted by September 30th (A.H.B.L.).

365. Firecrest (128).—One north of Kilnsea on October 16th (J.R.M., J.A.S.B., D.A.R.). The observers said the head pattern was more strikingly black and white than they would have expected.

366. Spotted Flycatcher (121).—One, Hornsea, April 30th (M.K.T.) but generally birds were three weeks later. One, Bretton, September 29th (J.C.S.E.). At Spurn, two, May 21st, one on 22nd and 31st. In autumn appeared August 22nd to 25th; September 3rd to 6th, 9th to 14th, and 22nd to 25th, in four short periods.

368. Pied Flycatcher (123).—First near Masham on April 21st (R.F.D., E.E.J.) and Bolton Abbey (E.S.S.). Seen near Masham as late as August 4th and 6th (R.C., E.E.J.). Ringed Ripley, 12/6/54; killed by cat, Blaenau-Ffestiniog,

Merioneth, 14/5/56 (A.F.G.W.). None at Spurn in spring. In autumn, three on August 24th, on most days September 2nd to 26th (peak *c.* 12 on September 10th), and one on October 8th/9th, and one, November 24th (J.C.L.).

373. Meadow-Pipit (76).—Ringed, Spurn, 6/8/55; near Isla Cristina, Huelva, Spain, 4/1/56. At Spurn no pronounced spring passage. At Redcar dunes, D.R. and P.S. watched almost every morning from 6 to 7 a.m., March 22nd to April 22nd. The main pipit passage N-W came, April 7th-10th (rate of three per minute), and April 20th to 21st (when pipits also coasted northerly at Staithes). *Circa* 50 in a field at Ilton on April 11th (P.Y.) could have been a party of newly-arrived Yorkshire breeders, or could be passage migrants as could several hundreds at Esholt Sewage Works on April 14th (L. Magee).

In autumn, the main passage at Spurn came on September 6th to 14th (*c.* 1,500 on the 12th); 21st to 23rd; and 29th to October 1st (*c.* 2,000 on the 30th) and smaller passage continued at intervals until late October. Large numbers were at Flamborough on September 22nd (A.J.W., H.O.B.), and at Cherry Cobb on the 23rd (M.K.T., H.O.B.). Over Doncaster, J.S.T. first noted pipit passage on September 5th, which continued fairly steadily to mid-October (38 in 15 minutes on September 15th, 35 in 30 minutes, September 27th, 58 in 30 minutes on October 1st, which latter was clearly part of the Spurn movement to October 1st). R.J.R. counted 183 in 75 minutes of the morning of October 1st at Bentley. *Circa* 250 were passing at Fairburn on September 16th; and there were movements from late September to November at Bottomboat, Swillington, Fairburn, which could be to or from roosts (W.C.W.).

374. Richard's Pipit (73).—On November 15th John Cudworth spent a long time at Spurn with a large, long-tailed pipit, after another had flown away, which he first named Richard's Pipit from the unusual call, and which was confirmed two days later, after very much more time and energy had been used, when he was able to obtain excellent views and to take a full description. The bird was also seen by J.K. and A. Fenton, C. Winn and others; and was there until the year end. A pipit seen on several days from March 9th by Norman Yule on the Bramble Farm Estate, Middlesbrough, was considered to be of this species.

376. Tree-Pipit (75).—One at Spurn on April 2nd gave good views and sang (H.G.B., S.J.W.), and was the only one of spring. A few recorded on several dates in September. Bentley Common, the earliest. April 16th (R.J.R.).

379. Rock-Pipit (81).—Nested at Runswick in cliff-face (O.C.H.). At Spurn slight movement noted March 30th to April 3rd; and autumnal movement from September 23rd to October 29th with peak on October 11th (ten) and October 29th (18). Fourteen were on the beach at Port Mulgrave on September 9th; and birds coasted N-W at Redcar between 6 and 7-15 a.m.; 12, October 11th; 22, October 12th; 16, October 13th (D.R. and P.S.).

380. Pied/White Wagtail (90/91).—Ringed (Pied), High Royd, 30/8/52; Le Temple de Bretange, France, 13/3/56 (Halifax S.S.). White Wagtails occurred in spring from April 7th to June 2nd—Ossett, April 8th, 15th (G.C., A.F.); two, Fairburn, April 14th to 17th (R.F.D., W.C.W.), High Royd, May 1st and 8th (both trapped) (R.Cr., T.K.); Ilton, May 25th and June 2nd (P.Y.); and one at Spurn on May 7th (where wagtails on several other dates were doubtful as to race). At Redcar on April 7th two coasted N-W with pipits; and *alba* was also seen on the 9th, 21st, 22nd, 30th and May 8th and 19th (D.R. and P.S., O.C.H.).

Pied Wagtails (*c.* 60) at Esholt S.F. on April 14th (L. Magee) typified several other spring concentrations. At Ossett Spa S.F. *c.* 250 came to roost in reed mace and willow herb between dusk and dark on September 17th/18th (A.F., E.G.). A roost in reed mace at Bottomboat (*c.* 100, October 6th) gradually reduced, and was not used by late November (W.C.W.). Passage at Spurn was recorded September 19th to 24th, and 29th to mid-October, with maximum 23 on October 9th.

381. Grey Wagtail (89).—Recorded at Spurn, March 30th and April 1st; and on most days September 3rd to 23rd with maximum of seven. A nest of dead young and a dead female in a Masham garden possibly resulted from use of insecticide or weedkiller. An unusually marked bird at Harrogate S.F. on February 25th had no eye-stripe or black bib and breast, belly and flanks were heavily marked with black on pale-grey (A.F.G.W., S.D.).

382. Yellow Wagtail (88).—Juvenile ringed, High Royd, 11/8/55; found dead near Blackburn (Lancashire) 24/5/56 (R.Cr.). One at Summerbridge on April 12th (R. Gill, A.F.G.W.) was the earliest. A male mated to a normal hen on Allertorpe

Common had the characteristics of the blue-headed race (B.D.). *Circa* 45 at Fairburn on April 14th included a compact party of 35 (R.F.D.). *Circa* 60 were at Harrogate S.F. on April 28th, *c.* 125 on the 29th, *c.* 70 on the 30th, and 15 on May 2nd (A.F.G.W.) which peak of immigrant passage was reflected elsewhere, in smaller numbers. Two birds at Wath Ings on October 10th (A.A., D. Ashurst) were the latest. More passed at Spurn than usual; seen on most days in August and September, with peak from August 23rd to 26th (16).

383. Waxwing (120).—Two were at Cloughton on January 16th (R.S.P.); one, Whitby, February 9th (A.B.W.), a small flock near Loftus in February (P.J.S.), 11 near Guisborough, February 15th to 17th (H. E. Ingram). A few also occurred about Harrogate in January and February (M.R.S., A.F.G.W.).

384. Great Grey Shrike (114).—Occurred in the early months: Ben Rhydding, January 7th and February 11th (R.C.P., E.S.S.); Great Ayton, January 15th (N. Yule); Glasshouses, January 22nd (E.C.S.); Gouthwaite, January 8th and March 18th (A.F.G.W.); Ackworth, February 26th (R. Harrison); Fairburn, February 11th, 18th and 26th (C.W., G.W., D.A.R.); Airedale S.F. (C.W.) on April 7th; Gillamoor May 22nd (Miss M. A. Hoare); Rylstone, June 3rd (E.C.S.). In autumn at Spurn, October 20th-21st; a probable near Leeds, November 18th (E.G.C.); Gouthwaite, October 28th (E.E.J., A.F.G.W.); and near Howden, December 28th (D.A.R.); and Levensham, November 3rd (R.M.G.).

385. Red-backed Shrike (119).—One at Spurn, September 10th to 13th.

389. Starling (14).—

Ringed, Harrogate, 18/1/56; Boston Spa, 26/3/56 (M.R.S., A.F.G.W.).

Ringed, Harrogate, 9/3/56; near Boroughbridge, 7/7/56 (M.R.S., A.F.G.W.).

Ringed, Ilkley, 8/1/56; near Catterick, 1/8/56 (W.N.S.).

Colour-ringed, Leeds, 22/4/51; re-trapped, 21/5/56 (A.H.B.L.).

Ringed, Loosduinen, The Hague, Holland, 16/11/54; trapped, Thornaby-on-Tees, 1/2/56 (P.A.R.).

Ringed, Thornaby-on-Tees, 17/1/55; Farnsum, Delfzig, Holland, -/5/55 (P.A.R.).

Ringed, Thornaby-on-Tees, 3/10/53; Darwen, Lancs., 30/12/55 (P.A.R.).

Ringed, Thornaby-on-Tees, 12/2/55; trapped, Bootham School, 3/2/56 (P.A.R.).

Ringed, Thornaby-on-Tees, 17/1/55; Nidløse, Sjaelland, Denmark, 25/7/56 (P.A.R.).

On March 23rd a flock of *c.* 950 at Redcar flew S-E then turned hesitantly N-N-E and out to sea; and shortly afterwards several small parties flew on the same course (D.R. and P.S.). The summer roost at Middlesmoor numbered *c.* 100,000 by mid-July, a large percentage juvenile (D.S.). Peaks at Spurn were: *c.* 1,350, October 15th; *c.* 3,000 on 16th; *c.* 2,000, October 27th; *c.* 800, November 3rd. On October 28th thousands flew S-W at Ossett in the morning (E.G.). Many small flocks came in from sea at Teesmouth on October 28th. A roost of *c.* 8,000 came into being at Melton Ponds in the week to October 28th (B.P.). Occasional starlings in O. C. Hill's garden have longer bills than normal; one on March 4th had a bill *c.* one and a half inches long and with proportional width; the bird looked like a tiny rook.

391. Hawfinch (18).—Occurred in the Masham area; at Hornby Park; near Harrogate; at Castle Howard; and as usual at Ripley.

392. Greenfinch (19).—Ringed, High Royd, 16/2/53; near Woore, Salop, 11/5/56 (R.Cr.). April 24th was a late date for *c.* 250 to be feeding in a newly-set field near Doncaster (R.J.R.). Several hundreds roosted in Chevet Wood on January 29th (E.G.). Peak period of passage at Spurn was from October 18th to 28th (*c.* 217) and from November 15th (*c.* 140) to 18th.

At Marley *c.* 200 fed on *persicaria* on September 1st (S.L.).

393. Goldfinch (20).—Occasional birds at Spurn up to May 9th; and from October 7th to 16th, with up to 14 on the 10th and 18 on the 13th. *Circa* 100 fed on thistles at Melton Ponds on September 2nd (B.P.). Occurred in small flocks in several areas; and breeding status was normal (i.e. not at all rare in many districts)

394. Siskin (21).—Near Bingley, where in a mixed flock of *c.* 120 on January 16th Siskins preponderated, the phrase 'a Siskin year' was used (D.V., J.C.L.). Occurred at Spurn on September 25th, October 10th (ten birds) and two on the 11th. Flocks of up to *c.* 25 to *c.* 50 were not unusual from early October around Bedale, Masham, Harewood, Nidderdale, Wharfedale, near Barnsley and elsewhere, in

alders, beeches, etc. Breeding was strongly suspected but not proved near Ripley (A.F.G.W.).

395. Linnet (30).—Ringed, Spurn, 27/4/56; Whitwell, Derbyshire, 19/7/56. Hundreds came to roost in Chevet Woods on January 29th (E.G.). At Spurn, *c.* 140 on April 3rd was the spring highest. Autumnal passage peaks were: September 21st (*c.* 500) to September 23rd; September 29th to October 1st (*c.* 750); October 8th to 15th (*c.* 900 on the 10th); and December 1st (*c.* 350). Flocks were coasting N-W at Redcar, October 10th to 11th (D.R. and P.S.).

396. Twite (28/29).—One occurred at Ilton on January 27th (P.Y.); three at Agden (near Sheffield) on September 22nd (D.R.W.); one at Gouthwaite on October 6th (D.S., A.F.G.W.); two or three at Spurn on most days, January 30th to February 15th; and one at Spurn, October 8th, 12th, 14th; four on November 4th; two on several days, November 17th to December 2nd.

397. Redpoll (23/25).—Recorded at Spurn on May 9th (one); and on a number of days from September 29th into October, maxima 15, October 2nd and ten, October 10th. Fifteen were near Hornsea Mere on April 14th (I.G.C.). Up to *c.* 100 were in alders at Wath on January 15th. A Redpoll in a mixed flock near Pateley Bridge on January 5th had a very pale almost white rump, white belly, and bright pink breast (W.H.J.). Bred as usual in many places.

401. Bullfinch (32/3).—Heard and seen in many places; and nests found. One at Spurn on October 15th.

404. Crossbill (36).—Thirty or more were in larches near Guisborough, July 6th to 7th (J. Grayson per P.J.S.); on the 8th an exhausted bird was picked up at Bempton (P.J.S., T.M.C., H.E.I.). Three were on Flamborough cliff top (two ad. males) on July 25th (W. Wallace per A.B.). A flock of ten flew over Pexton Moor on July 14th (A.J.W.). One was at Spurn on July 10th (R.M.G.), two on September 10th, three on the 21st, and one seen on four days between. Further records were: one, Skipwith, August 6th (E.E.J.); a party calling from R. S. Pollard's neighbour's garden on August 15th, and some seen in nearby pines during the autumn (R.S.P.); five near Masham on August 31st (E.E.J.) near to conifers where *c.* 30 were noted on November 14th and December 19th (P.Y.); about 50 in woods about Wensley in early October (Hon. R. Orde-Powlett); nine at Apperley Bridge on October 2nd that fed on whitebeam berries in a school quadrangle (E.E.J., D. A. Walmsley), and numbers in the Fadmoor area from mid-October to mid-December, including 23 on November 25th (T.E.D.).

407. Chaffinch (40/41).—There was evidence of spring passage March 24th to April 3rd at Spurn; and of autumn passage October 15th to 17th and on October 22nd. Inland winter flocks were normal.

Ringed, Thornaby-on-Tees, 22/12/50; dead, Acklam, Middlesbrough, 1/4/56 (P.A.R.).

Ringed, Leeds, 31/5/51; dead, end/7/56 (A.H.B.L.).

Ringed, Wharfedale, 23/12/51; recaptured, 24/11/56 (W.N.S.).

408. Brambling (42).—The larger flocks were: near Masham, *c.* 150, January 18th (E.E.J.); *c.* 100, Chevet Woods, January 27th, where one occurred on October 7th (E.G.); *c.* 50, Rivelin Valley, Sheffield, April 15th (D.R.W.); *c.* 100 in Ellerburn Wood on November 27th (R.M.G.); up to *c.* 200, Hookstone Wood, November 17th, and up to *c.* 200 near Gouthwaite in November and December (A.F.G.W.); *c.* 60 near Huddersfield, November 14th (E.C.J.S.). At Spurn the last occurred on April 28th; and the first on October 6th (two); fewer came in autumn than in 1955; the maximum was *c.* 100 on October 15th.

409. Yellowhammer (44).—Cold weather movement at Spurn was shown by 14 on February 12th, and 12 on February 15th; and apparent passage by *c.* 30 on October 10th, and *c.* 20 on October 21st, which were the peaks of the year, with fewer than six seen on most days. *Circa* 50 fed in a field at Ilton on January 5th, on seeds from hay put out for cattle (P.Y.). A flock of *c.* 45 were near Eccup Reservoir on November 4th (J.R.G.).

410. Corn-Bunting (43).—Recorded at Spurn in numbers above six: sixteen, March 17th; ten, April 3rd; *c.* 20, October 21st; 12, October 24th. Present in breeding season in coastal fields from Redcar southward to near Spurn, and in the Dearne Valley, and at various well-known haunts.

413. Red-headed Bunting (47).—A male at Spurn in the field behind Warren Cottage on September 9th to 11th was identified very conclusively. It was first seen by D. B. Iles and subsequently by J.C., R.C.P., D.A.R., H.O.B., A.G., and

others; and a full description entered in the log. The bird was in perfect condition and carried no ring such as some aviculturalists use, and behaved like a wild bird. Nevertheless, the possibility that it might be an 'escape' cannot be overlooked, in view of the frequency with which numbers of the species are imported for sale; with which proviso we refrain from using square brackets. The species is new to the Yorkshire list.

421. Reed-Bunting (55).—Thirteen males and one hen were ringed at the Knaresborough S.F. trap, April 1st to 3rd (J.R.M.). Near Catterick fed in a stack-yard during the February cold spell (G.R.P.); and at Redcar, in the week to February 26th, two males and a hen fed at a back door with Meadow-Pipits and Redwings in snow (D.R. and P.S.). At Spurn, *c.* 25 on January 5th was not equalled as an estimate of numbers present on a day until *c.* 40 on September 21st, *c.* 50 on October 9th, *c.* 60 on October 10th, *c.* 30 on October 18th, and *c.* 40 on October 21st which were days of maximum passage.

422. Lapland Bunting (58).—At Spurn were two indefinites on January 6th, four definites on March 18th (J.C.); and one flew north on April 21st (J.C.). After appearing on seven days from September 5th to October 7th, Lapland Buntings were recorded on most days to the year end. Most were flying south during the early morning watches of J. Cudworth and others, some came off the sea; a few occurred in the Beacon area, and some in Clubley's stubble. Days of maximum passage were November 4th (*c.* 82) and November 15th (*c.* 230) most being seen flying south in early morning, as was the case with *c.* 136 on the 16th, and with *c.* 105 on the 17th; and December 1st, *c.* 80, almost all of which flew south. Later records were in smaller numbers. At South Gare, one, possibly two, was among the dunes on September 8th (D.R. and P.S.).

423. Snow-Bunting (59).—Six near Blakey Ridge on January 6th (T.E.D.). Last seen on Coatham Sands, eight on March 17th (D.R. and P.S.). At Spurn, in the early months up to *c.* 300 were recorded on January 21st-22nd; and numbers remained large until March 4th (*c.* 100), then dwindled daily until April 3rd when the last two were seen. Three were at Ulrome on the same day (B.P.). During the early months 401 were ringed, and with the December, 1956, birds added, 446 in the year. Many were re-trapped, some many times; a number of birds ringed in late December, 1955, were re-trapped in February and March, 1956, and some of the previous winter were caught in December, 1956. One ringed 29/1/56 was at Gibraltar Point (Lincs.), 10/3/56. One that had been ringed 31/10/55 on Fair Isle was caught by us on 28/1/56 and on dates in February. An adult hen ringed in the Chalk Bank area on 30/12/55 was trapped and released at Le Zoute, Knokke, West Flanders, Belgium, on 28/11/56—was that a North European or an Iceland breeder? There will be other recoveries to repay the hardihood of those who put in so many wintry days at Spurn. To be sure that a ringed bird was 'one of ours' when seen, red rings were placed on the other leg of a large number.

In the autumn a male appeared at Redcar on October 6th, and by December 16th, Snow-Buntings at South Gare and Coatham Sands numbered *c.* 150 (D.R.S., P.J.S.). At Spurn the earliest of autumn was one on September 15th, but the species was recorded on only a few days until October 25th, after which numbers built up to *c.* 150 on November 11th and to *c.* 380 on December 29th. Elsewhere in the autumn *c.* 50 were near Stanghow in December (M. Allison); up to *c.* 60 at Flamborough on November 5th (A.W.); *c.* 100 at Atwick on December 16th (M.K.T.); *c.* 20 at Hornsea (R.W.D.) and *c.* 30 at Tunstall (A.C.) both on December 30th.

424. House-Sparrow (61).—The number recorded at Spurn daily from January 1st to April 28th (*c.* 100-150) was halved or more from that date; and increased again to *c.* 100 on November 10th and 11th. Birds passing south in early morning often include some House-Sparrows which could be migrants, or be merely passing from a roosting-place to a feeding-place near to the Point.

Ringed, Spurn, 29/9/55; Out Newton, near Withernsea, 16/11/56.

Ringed, Spurn, 4/3/56; Nunkeeling, near Driffield (27 miles N-W) 24/3/56.

Ringed, Spurn, 30/12/55; Hilston, Yorks. (14 miles, N-W), 9/7/56.

Ringed, Spurn, 30/12/55; Paull, near Hull, 10/3/56.

425. Tree-Sparrow (62).—A few occurred at Spurn on January 5th and in five days between March 29th and April 7th; and on a number of days from October 10th to December 1st. At Knaresborough S.F. 18 pairs nested in boxes and 106 young were ringed (J.R.M.).

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FIELD NOTES

Day Foray to Hardcastle Craggs.—On October 20th, 1956, a joint meeting between the Yorkshire Naturalists' Union and North-Western Naturalists was held at Hardcastle Craggs near Hebden Bridge, the old collecting ground of James Needham. Eighteen mycologists and friends met at Hebden Bridge Station at 11 a.m. and due to the kindness of Messrs. Collinge and Greenwood the party was soon transported to the collecting grounds farther up the Hebden Valley. Miss Hirst also attended and increased the party further by bringing along eighteen young students. During the day a few members of local societies joined the foray and stayed to do a little collecting. During the morning the party examined Foul Scout Wood and Hebden Wood and packed lunch was taken at Hebden Lee, after which collecting was continued up to Gibson Mill Cafe. A more energetic party continued farther up the valley, examining Ingham, Greenwood Lee and Gibson Woods. The members had tea at Gibson Mill, after which the party walked to the cars and so back to the station.

Many of the commoner agarics were collected and need no listing. The following are of interest, those marked (†) being additions to Mason and Grainger's *Catalogue of Yorkshire Fungi*:

Lepiota amianthina (Scop.) Fr.

Tricholoma rutilans (Schaeff.) Fr.

†*Chitocybe langei* Sing. (= *vibecina* Lge. non Fr.) (Spores $5.6 \times 3.3.5\mu$).

†*Collybia cookei* (Bres.) Arnold. On *Armillaria mellea*.

Marasmius androsaceus (Linn.) Fr.

†*Russula mairei* Sing. Under Beech.

Naucoria (Alnicola) escharoides Fr. Under Alder.

Galerina mycenopsis (Fr.) Kuhn.

G. hypnorum (Shrank. ex Fr.) Kuhn.

Cortinarius (Dermocybe) sanguineus (Wulf.) Fr.

Boletus badius Fr.

Mr. Collinge and Dr. Hincks forward the following list of *Mycena*'s collected:

M. galopoda (Pers.) Fr..

M. galericulata (Scop.) Fr.

M. sanguinolenta (A. et S.) Fr.

M. alcalina Fr.

M. epipterygia (Scop.) Fr.

M. vitilis Fr.

†*M. longiseta* v. Höhn. (On collecting more mature material a few days after the foray, I found this small *Mycena* with a basal bulb to agree with the above species: Spores $6-8 \times 3-4\mu$. On bark and leaves. R.W. New to British List).

Sphaerobolus stellatus (Tode.) Pers. and *Typhula erythropus* (Bolt.) Fr. were both found. *Clavaria rugosa* (Bull.) Fr. and *C. corniculata* (Schaeff.) Fr. were also of interest. †*Gloeocystidium pallidum* (Bres.) v. Höhn. et Litsch., on old *Ulmus* was the only resupinate of interest collected (Wat. Herb. No. 416).

Few Ascomycetes were found except the very closely related *Coryne sarcoides* (Jacq.) Tul. and *C. urnalis* (Nyl.) Sacc.

†*Mollisia uda* (Pers.) Gillet (new to British Isles) was collected on old *Alnus* immersed in water under a waterfall. Its occurrence at this place has been known to the writer for some time.

Thanks are due to all those who have helped with identifications and in producing the above list.—R. WATLING.

Alien Plants Growing in the Bradford District during 1956.—After the cool and wet summer of 1956, the warm autumn brought several of the rarer aliens into flower. *Phalaris canariensis* L., *Lolium temulentum* L., *Setaria viridis* (L.) Beauv., and *Brassica tournefortii* Goudn., were to be found on most town councils' rubbish tips. The characteristic wool alien plants, e.g. *Xanthium spinosum* L., *Erodium botrys* (Cav.) Bertol., and several *Medicago* species, were found on most of their usual sites.

At Esholt Sewage Works, Bradford, *Medicago arabica* (L.) All., *M. laciniata* (L.) Mill., *M. denticulata* Willd., *M. minima* (L.) L., were frequent, and several of these were found at the Valley Scouring Works, Shipley. At Esholt Sewage Works, *Melilotus alba* Desr. and *M. indica* (L.) All. were frequent, and there were several unusual grasses, viz. *Polypogon monspeliensis* (L.) Desf., *Bromus unioloides* H.B.K., *B. commutatus* Schrad., and *Phalaris tuberosa* L.

At Valley Scouring Works tip, *Hordeum glaucum* Steud., and *H. jubatum* L. were common. Other aliens found here were *Erodium botrys* (Cav.) Bertol., *Melilotus alba* Desr., *Bromus arenarius* Labill. (det. Kew), *B. unioloides* H.B.K., *B. madritensis* var. *ciliatus* Guss. and *Hordeum hystrix* Roth. (det. Kew).

At City Road Sidings, Bradford, *Vulpia bromoides* (L.) S. F. Gray and *Hordeum glaucum* Steud., were common. Two other interesting grasses found on the wool shoddy wharf were *Lamarkia aurea* (L.) Moench. (det. Kew), and *Koeleria phleoides* (L.) Pers. (det. Kew). —D. R. GRANT and T. SCHOFIELD.

***Agapetus delicatulus* McLachlan (Trichoptera, Glossosomatinae) in Yorkshire.**—The above species can now be added to the Yorkshire list from adults collected by me in the vicinity of Barden Bridge, Wharfedale (V.C. 64), during August, 1954. This record has only just come to light through my entering up additions to the Y.N.U. Trichoptera records from recent publications and my own records, since the death of the recorder, Mr. H. Whitehead, three years ago.

In a recent paper entitled 'Taxonomy of the larvae of the British Species of the Sub-Family Glossosomatinae (Trichoptera)' (*Proc. R. ent. Soc. Lond. (A)*, **31**, 167-172, 1956) Mrs. Jean C. Mackereth gives illustrations of the larval claws and a dorsal view of the thorax of the above species, from specimens taken in the River Wharfe.—H. M. RUSSELL.

BOOK REVIEWS

The Open Sea, Its Natural History: The World of Plankton, by **A. C. Hardy**. Pp. xvi+335 with 24 plates in colour and 24 plates in black and white. The New Naturalist, 1956. Collins. 30/-.

A striking feature of this book is its wealth of excellent illustrations, very many by the author from live material, and numerous photographs by Dr. D. P. Wilson. The text is eminently readable, the style being stimulating. There is an immense amount of information presented about British seas, often elaborated by reference to the author's experience in the Antarctic while working on the biology of whales.

While, of course, there have been other works on the seas which included accounts of plankton composition and cycles, none in the experience of the reviewer presents the subject so comprehensively as does this book. It includes plankton from the surface to the great depths, large and small, plant and animal. We follow the rain of corpses from the upper waters, providing food for those lower. We observe the inverted pyramid of numbers with the animals having grotesque shapes and immense toothy mouths in the great depths forming the apex. A striking part of the discussion is about phosphorescence and phosphorescent organs. The author has views about the function of these in the scheme of things.

Besides having contributed very considerably to the knowledge of the seas, the author has obviously a very great interest in the history of his subject. The introduction contains a brief, yet useful, review of the important work of the pioneers leading to the founding of the International Council for the Exploration of the Sea, which has accomplished so much in the North-eastern Atlantic.

While this book deals with conditions in the Atlantic Ocean, and particularly the North-eastern Atlantic, it is nevertheless useful in more remote parts of the world. The bibliography has over 144 items. There is a useful glossary and a considerable index.

Professor Hardy proposes to issue a second volume which will deal principally with fish and fisheries.

E.P.

The Water Relations of Terrestrial Arthropods, by **E. B. Edney**. Pp. vi+109 with 32 text-figures. No. 5 of the Cambridge Monographs in Experimental Biology. Cambridge University Press, 1957. 15/-.

Arthropods living on dry land are faced with a serious water problem. Their small size results in a relatively large surface area to volume ratio, and unhindered evaporation would soon lead to death by desiccation. The study of the means and extent to which various arthropods have solved this problem makes a fascinating study of particular interest to physiologists and ecologists. The present monograph, by the Professor of Zoology in the University College of Rhodesia and Nyasaland, is largely concerned with the various processes of water uptake and loss and the means of achieving a water balance.

It might be thought that the investigation between the rate of water loss and the physical conditions of the environment (such as temperature and relative humidity) should be fairly straightforward. Indeed, in 1932 it was claimed that the physical relationship had been found and was enunciated as the *saturation deficit law*. Since that time, however, the observation of numerous deviations from this law has provided the stimulus for much research, new fields of investigation have opened up and the whole matter has turned out to be much more complex than might have been anticipated. There are many unsolved problems, such as the nature of the waterproofing wax layer of the cuticle or the mechanism by which water vapour can be absorbed from unsaturated air. The book also shows that there are healthy differences of opinion in the interpretation of some experimental results. Professor Edney has therefore performed a valuable service in collecting together and discussing critically a wide range of published work scattered through many different journals. Almost 250 references are given in the bibliography, and some unpublished results are mentioned in the text, so that the book is a 'must' for serious students in this subject.

The present volume has maintained the high standard set by earlier monographs in the series, both in the erudition and clarity of the author and in the lay-out and careful printing by the C.U.P.

B.A.K.

Osteology of the Reptiles, by **Alfred Sherwood Romer**. Pp. 772 with 248 text figures. University of Chicago Press, Chicago, 1956. Agents: Cambridge University Press. 150/-.

A great American tradition is enhanced rather than maintained by Professor Romer's definitive guide to the classification of the reptiles, past and present. The book had its origins in an attempt to revise Gregory's edition of Williston's draft work but the incorporation of so much that was new necessitated a fresh approach and the present work is not, therefore, a rehash of the earlier work of the same title.

Although the heyday of the reptiles was in the Mesozoic, it must be remembered that the modern mammals and birds had their origins in the same period and stem from the same stock so that a consideration of their skeletal anatomy has the widest significance.

Professor Romer leaves nothing to his neighbour and there is a detailed introduction to nonskeletal organ systems as a preamble to the study of the skeleton proper. The skull naturally claims the first quarter of the latter and what is termed 'A Brief History of Reptilian Classification' tightly occupies about 250 pages. There is a full and comprehensive bibliography and a full index.

Appraisal of an authoritative work must be from below and it may suffice to say that Professor Romer imparts his immense knowledge with a rare lucidity. This is a work of reference the scope and quality of which places it beyond the range of all but the more serious students of vertebrate anatomy but on this account also it will be required in every teaching library and ready to the hand of all those who teach or seek after the bare bones of zoological truth.

E.H.

Bird Wonders of Australia, by **A. H. Chisholm**. 4th ed., pp. 244, 65 photographic illustrations, 1 in colour. Angus & Robertson, Sydney, 1956. 25/-.

Although re-set and re-illustrated, this edition of a familiar work mixes as before a cunning brew of the lives of the more commonplace birds of the Australian continent, spiced here and there with details of the rare and the extraordinary.

I know from experience that the Australian-in-the-street is bird conscious—rigorous protection laws long anticipated our own—and it is not surprising that the book has run into four editions. What is more gratifying is that although it is in popular vein, its author writes with complete authority and a full knowledge of recent work on bird behaviour from continents beyond his own. This may not be entirely disinterested since the tourist making a quick visit to Melbourne or Sydney may be surprised to find that the greater number of urban species are familiar birds of European origin but it may be pertinent to remark that the study of 'anting' in birds began with the observations of a schoolboy in a Melbourne backyard.

Since I have enjoyed the hospitality of Australian bird-watchers and sampled their delights I find it hard to appraise their story with detachment but to those whose interest in birds extends beyond those on the British list and whose pleasure resides in their infinite variety I do commend this eminently readable account of some of the more noteworthy and sometimes controversial aspects of antipodean ornithology.

On the other hand the illustrations bear out my impression that there is lots of scope for the bird-photographer since even the commoner species are portrayed without artistry and sometimes without definition.

A.H.

Emperor Penguins, by **Jean Rivoliér**. Pp. 132, with 22 photographic illustrations. Elek Books, London, 1956. 15/-.

This is the story of a French expedition to study a population of Emperor Penguins in Adelie Land which sailed in 1951 to spend an entire breeding season alongside the birds. As the period from courtship to fledging occupies about ten months, this involved passing the whole of the antarctic winter in isolation and making continuous observations in conditions of the most trying kind. None of the four members of the party was an ornithologist and only one had spent a winter in the Antarctic so it may have been as well that a disaster elsewhere added three more to the party. The first part of the book relates the mode and manners of the party's cramped and intimate life in a way which is becoming increasingly familiar as more and more sojourners in the cold and windy wastes return to unburden their pent-up souls.

In the second half, the highly specialised breeding behaviour of the birds is briefly told. The expedition seems to have added little, if at all, to the work of Stonehouse and even in a popular way there is little added to the known story. Perhaps little more could be expected from a team whose principal observer asked, shortly before sailing, 'Do you happen to know what these Emperors are? I hear they're some kind of bird. I'd have thought that anything that lived on the ice or in the sea would have to be a cross between a mammal and a fish . . .'

A.H.

The Friendly Fungi: A new approach to the eelworm problem, by **C. L. Duddington**. Pp. 188, with 24 photographic plates and 7 text figures. Faber & Faber, London, 1957. 21/-.

This is no ordinary book about the fungi as a casual glance at the main title might suggest. It is a devoted account, written with the authority conferred by over 20 years of intensive study, of the remarkable assemblage of taxonomically diverse and surprisingly numerous soil fungi equipped to capture and consume eelworms. Whether or not they can be exploited to the advantage of agriculture in the ways suggested by the author, the reader cannot fail to be fascinated by the varied details of construction and biology which fit them for their curious but important mode of life.

This is one of a well-known series of books of interest to farmers and gardeners, and perhaps the naturalist should not complain if to him the treatment seems somewhat unbalanced. The first-hand account of methods of collecting and of culture in such a way as to induce the formation of the fantastic nets and snares is wholly admirable and so also are the detailed descriptions of individual species and the line drawings. The comprehensive review of the literature will be as useful to the serious student as to the layman for whom the book is mainly intended, but some of the detailed experimental data of inconclusive work could well have been spared for more basic factual information about the nature and classification of fungi, and the concepts of parasitism and saprophytism, to match the extensive and somewhat repetitive treatment of the subject of biological control. The lavish photographic illustrations would have gained in force if some of the less satisfactory had been omitted and others trimmed to half size. All this would matter less if it were not to be feared that the price may hinder the wide circulation of this interesting volume, and it is a matter for regret when books of this sort reach their proper public only after they have been 'remaindered'.

It may be of interest to readers to know that the classic film by Comandon and de Fonbrun which is referred to in the text is readily available in this country for a nominal fee from the Institut Francais, Queensbury Place, S.W.7.

A.D.G.

Seal Morning, by **Rowena Farre**. Pp. 178 with decorations by Raymond Sheppard. Hutchinson, London, 1957. 15/-.

Miss Farre is a talented and evocative writer who relates as an adult her experiences in childhood when she shared a Highland croft with her aunt. Both were sympathetic to wild creatures and the book's title derives from one especial pet, a common seal which the author rescued as a foundling and reared to be a most accomplished companion and an apparently gifted performer on wind and percussion instruments. Other pets and wild acquaintances provide the weft for a story which runs as smoothly as a novel through the ups and downs of a crofting life.

Memory, especially from childhood, smoothes and welds the ragged pattern of life and although Miss Farre's account cannot be accepted as critical and valid in every regard, its recounting, like the story of Miss Howard's titmice, denies too mechanistic an interpretation of animal behaviour. Hints that she has made protracted observations of seals in the wild suggest that she may yet add considerably to our knowledge of a little-studied and oft-persecuted species.

Raymond Sheppard's illustrations are charming as always and the book is graciously produced.

E.H.

A revised key to the British Water Bugs (Hemiptera-Heteroptera) with notes on their ecology, by **T. T. Macan**. Pp. 74. Scientific Publication No. 16. Freshwater Biological Association, 1956. 4/-.

This revision of the keys previously published in two parts as Nos. 1 and 4 of the

Association's Scientific Publications must be highly commended for its very successful arrangement. Fundamentally the same as the previous keys, the layout and arrangement of figures relative to text has been substantially altered and greatly facilitates the use of the keys. These have been expanded in parts, notably in those dealing with Corixidae, and the inclusion of species recently added to the British list brings the work completely up to date. Most entomologists will welcome Dr. Macan's use of the generic name *Corixa*. *Sigara*, *Anticorixa* and the rest are treated as sub-genera and these names are not used at all.

The water bugs are an interesting group and this key makes certain identification a straightforward matter.

J.H.F.

The Eighth Plague, by Denys Rhodes. Longmans, Green & Co., 1956. 13/6.

Mr. Rhodes's novel is set against a background of locust control in Africa, and gives a very fair picture of the organisation of the war on the locust. It is a story of personal relationships and the use of the locust control organisation as a pawn between contending political factions while theories of the use of aircraft to spray the swarms are put into practice. Light entertainment with mainly reliable information, though one wonders whether it was necessary to make the spraying aircraft fly through the dense parts of the flying swarms. Liquid spray is lethal against flying locusts 500 feet below the aircraft.

J.H.F.

The Observer's Book of Garden Flowers, compiled by Arthur King from G. A. R. Phillips' *Book of Garden Flowers*. Pp. 240 with 100 colour and 100 half-tone illustrations by Joan Lupton. Frederick Warne & Co. 5/-.

This latest addition to the Observers' Series consists of brief descriptions of the most popular and attractive species in 200 genera of garden flowers with hints on propagation, times of flowering and a short introduction covering basic cultural procedure. The illustrations are adequate for recognition and the inexperienced gardener will get plenty of ideas for increasing the stocks of plants in his flower beds.

Come Rain, Come Shine, by John Moore, with drawings by Jennefer Porter. Pp. 256. Collins. 18/-.

The sub-title, 'More Country Contentments', provides a good clue to the contents of this book, which is a collection of the author's occasional writings and broadcasts. Mr. Moore lives in the Cotswolds and writes, pleasantly enough, about the country he knows. The cycle of the seasons provides a slender framework for these essays on legend, folklore, dialect, hunting, fishing and natural history. Some eccentric rustic characters are thrown in for good measure—too good some of them to ring quite true, perhaps.

Naturalists are not likely to add much to their knowledge from this book and will find a few minor inaccuracies. But after all the book is designed to amuse, not to teach. Jaded townsmen and hibernating lovers of the countryside can pass a pleasant evening or two dipping through Mr. Moore's leisurely pages.

C.S.

The First Fifty Years: A History of the Kettering and District Naturalists' Society and Field Club. Pp. 133. From the Hon. Secretary, Mr. R. E. Leaton. 11 Wordsworth Road, Kettering. 10/6 (plus postage).

The years covered are 1905 to 1955. Subjects include 'The Growth of the Society', 'Limestone Grassland in Northamptonshire' by Ian Hepburn, and 'The Birds of John Clare' by James Fisher; together with articles on the various branches of natural history on which the Society works (geology, botany, mycology, insect life, ornithology, etc.). This publication will be of great value and interest in Northamptonshire and to naturalists over a far wider field. John Clare is described as 'the finest naturalist of all Britain's major poets', which, by the use of quotations, Mr. Fisher goes a long way to prove in 45 pages, as G. C. Druce did in *The Flora of Northamptonshire*.

We have received a copy of the 'Report 1951-1955' of the Doncaster and District Ornithological Society, edited by J. S. Trimmingham. No claim is made that the list is in any way exhaustive, but the status of birds in the area in the period stated is set forth as observed by sixteen keen local observers. A worthy summary of a good beginning.

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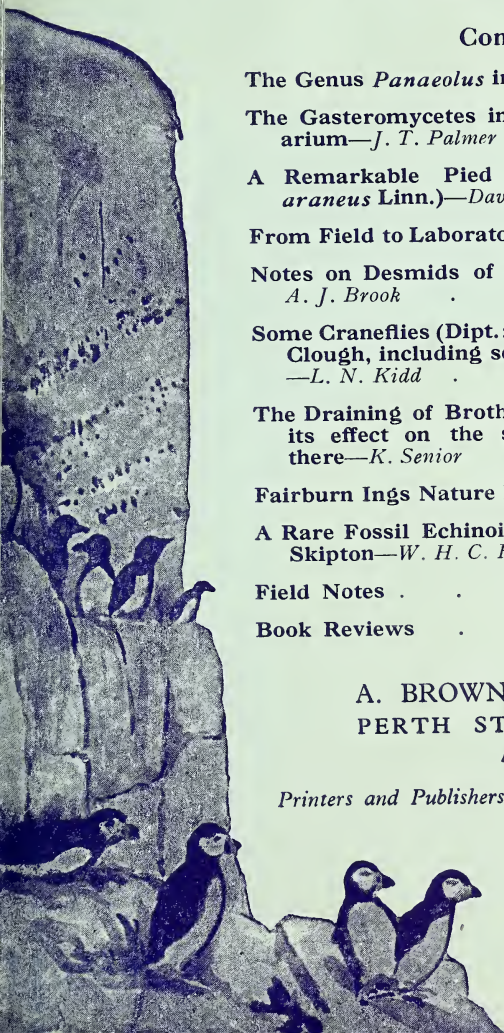
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WANTED Copies of *The Naturalist* for September, 1910 and March, 1921. A. Brown & Sons, Ltd., 'C.' Dept., Perth Street West, Hull.

THE GENUS *PANAEOLUS* IN BRITAIN

F. B. HORA

Synonyms: *Anellaria* Karst, 1879.

Chalymmota Karst, 1879.

Coprinarus Kummer, 1871.¹

Type species: *Panaeolus sphinctrinus* (Fr.) Quél. (1872.)

THE LIMITS of the genus as here understood are those laid down by Fries in his *Hymenomyces Europaei* (1874). A modern differential diagnosis may be given as follows: centrally stemmed agarics with non-deliquescent, characteristically mottled gills, cellular-hymeniform cuticle, and black, smooth, more or less lemon-shaped (limoniform) spores. Mottling is best seen by taking a vertical section through the cap of a half-ripe fruit body. It results from the spores ripening in patches over the surface of the gill. The phenomenon occurs in other coloured spore genera with the possible exception of the pink spored genera. There is no clear evidence that it exists among the white spored genera, where it would, in any case, be difficult to detect. Many aspects of mottling have been described and investigated in great detail by Buller (1922).

Fries included velate and non-velate species in his concept of the genus, pointing out (*Monographia*) that the veil was not here a useful character at the generic level. Nevertheless, Karsten erected the genus *Anellaria* based on *Agaricus* (*Panaeolus*) *semi-ovatus* (= what has long been known as *Anellaria separata*) because of the presence of a ring, and *Chalymmota*, based on *Panaeolus sphinctrinus* because of the appendiculate veil. According to Immler (1951), Reynders has shown (personal communication) that the veil which gives rise to the ring in *P. semi-ovatus* is identical in development with the structure that is responsible for the appendiculate veil in *P. sphinctrinus*.² Furthermore, field observations soon show that the degree of development of the ring in *P. semi-ovatus* varies from a well-defined membrane to little more than an ill-defined annular zone. Variations of this nature are well known to be quite common in coprophilous species. As pointed out later in the Index and Notes, *P. fimiputris* and *P. leucophanes* represent in all probability two such forms of *semi-ovatus* that have received specific names. All this seems to me to be strong evidence that *Anellaria* is not generically distinct from *Chalymmota*, which latter is based on the same type as *Panaeolus*. For me, therefore, *Anellaria* and *Chalymmota* fall into synonymy under *Panaeolus*. This does not mean to say that I regard that genus as 'natural': it is probably a mixed bag of species from several different evolutionary lines; nevertheless, it is a very convenient unit, and that seems to me to be its great justification.

NUMBER OF SPECIES AND DISTRIBUTION. Taking the genus in the wide sense of Fries, upwards of 50 species have been described. Of these, about 11 in Europe are more or less agreed upon. In addition, about half a dozen have been carefully described by Smith (1948) from North America. Little or nothing is known among modern lines of the remainder. It is not surprising, therefore, that distributional data are incomplete. The European species would appear to be pretty cosmopolitan. Probably the majority of the remainder are not known outside the type locality. In the present paper, I recognise 12 species as British. Of these, 11 occur on the Continent and the twelfth is a new record for this country of a species recently described from the Færøes.

EDIBILITY. None of the British species is recommended for the table. In the majority of cases, the cap is at best thinly fleshy. *P. sphinctrinus* and *P. papilionaceus* are stated (Singer, 1949) to be used as intoxicating drugs in Central America and are poisonous in doses of 50-60 specimens. One or two species have nuisance value in mushroom beds.

HABITAT. The British species are predominantly grassland inhabitants especially of rich meadows and pastures, often on dung; only occasionally are they found on bare ground or under trees.

MORPHOLOGY. Cap variously shaped: parabolic (height greater than width), semi-globate, convex, rarely expanded, often more or less umbonate or in some way somewhat constricted at or above the middle (see Fig. VI), rarely more than thinly fleshy, hygrophanous, expallent or neither, colours mainly sooty black, some shade

¹ It is hoped that the generic name *Panaeolus* will be conserved against *Coprinarus*.

² Immler used the specific epithet *campanulatus*, but the context makes it clear that *sphinctrinus* as here understood is the same thing. See notes under *campanulatus*.

of brown or lead grey, dry or viscid in moist weather, edge even, without velar remains, or crenate of more or less dentate, at least in young opening caps, from the remains of an appendiculate veil. Gills at first greyish, then more or less black mottled, finally wholly black in mature specimens, adnexed or adnate and then often falling away as cap matures, edge whitish. Stem equal or slightly tapering upwards, at times weakly swollen at the base, mostly straight, occasionally flexuous or decumbent, smooth or striatulate, commonly whitish-pruinose throughout, pallid, pale pinkish brown, tan to almost black beneath the pruina, mostly darkening with age but almost always paler upwards, more or less solid at first becoming finally hollow; a membranous ring, sometimes reduced to little more than a zone, occurs in *P. semi-ovatus*; spores in the mass black.

ANATOMY. Some observations under this heading were made many years ago by Godfrin (1903), who concluded that the genus (in the sense of Fries) was heterogeneous. In some cases I have found it rather difficult to harmonise my own observations with his, and I am not convinced that differences in the cuticle structure are as constant and useful in the separation of species as he believed. The cellular-hymeniform cuticle is sometimes beset with sparsely distributed cap cystidia (Fig. I C, II) rather similar to the marginal cystidia on the gill edge, but sometimes the walls are rather thicker and yellow coloured (in water mounts). I do not yet know if they have specific significance, but I was unable to find them in *P. fimicola*. In most species, the cuticle passes gradually into the rather wide (10-15 μ) irregularly arranged sausage-shaped cells of the cap flesh. In *P. sphinctrinus*, however, there is a sub-cuticular layer of thin hyphae (3-5 μ) between the cuticle and cap flesh, which anastomose to form a wide-meshed network parallel with the surface of the cap. In vertical sections of the cap, this layer appears as a blackish line as it readily injects with air which is not generally displaced in water mounts, so that individual hyphae are difficult to see. In thickish 'scalps' of the cuticle (parallel with cap surface), the wide meshwork of narrow hyphae can usually be seen by focussing down through the cellular-hymeniform cuticle. The gill trama is essentially regular consisting of more or less parallel hyphae 10-15 μ wide. Marginal cystidia (Fig. II M) are always present on the gill edge. They are mostly hair-like, swollen at the base and often sub-capitate. Facial cystidia (Fig. II F) are present only in *P. ater*, *P. phalaenarum* and *P. semi-ovatus*. They are of the chrysocystidia type with characteristic and deeply staining internal 'body'. Being deeply immersed, they are not easy to see, but are usually recognisable, after a little experience, by the projecting mucronate apex. The fine pruina on the stem of most species is due to stem cystidia which are rather similar to the marginal cystidia of the gills. The basidia (Fig. I B) are 4-spored: I have seen odd 2-spored basidia, but they are exceptional. No doubt they are responsible for the occasional appearance of giant spores 20-22 μ long. The spores are always smooth with a well-developed germ pore and more or less limoniform except in *P. semi-ovatus* where they are elliptic-ovate.

COLLECTION. It is always advisable to have several specimens of each species. They are best kept for the time being in air-tight tins or stoppered specimen tubes without added moisture. The initial colour and any zoning of the cap should be noted and the cap edge examined for the presence of any appendiculate veil. For this last purpose, young specimens are essential. A note should be made of the habitat and immediate substratum as well as place and date of collection.

EXAMINATION. On returning from collecting, a mature specimen should be set up for a spore print in the usual way. Unless specimens have been collected during rain or shortly after, the hygrophanous or expallent state of the cap is likely to be missed. It may, however, be readily restored by placing a toadstool in a specimen tube or paste pot with enough water to reach about half-way up the stem. A small bell jar or jam pot is placed over the whole. In an hour or so, the cap will become water saturated. In a hygrophanous or expallent species, water saturation results in the cap being much darker than the air-dry state. In a truly hygrophanous species, the water soaked cap is more or less translucent (rather like gelatin). When this occurs, the base of the gills (where they join with the cap) can sometimes, but not always, be seen through the cap flesh at least at the cap margin. Such a cap is known as *pellucid-striate*. On drying out the cap soon becomes *opaque* and much paler in colour and no longer pellucid-striate. In a truly expallent species, the cap is *opaque* when water saturated and not translucent nor pellucid-striate: on drying out it merely becomes paler. The distinction between these two states is not always clear cut, but this is not usually of great importance. What is important is to know

what changes take place in the appearance of the cap as it dries out from the water-saturated condition. In the section *Nudi* the cap regularly dries from the centre outwards, so that when more or less half dry, the still saturated margin shows up as a darker zone against the paler and drier remainder of the cap. When fully dried out, the cap is more or less uniformly coloured and no marginal zone is visible. A water-saturated cap allowed to air-dry in a room out of contact with water, shows the zonation effect in about half to one hour.

For examining the cuticle and cap cystidia, a thin slice ('scalp') parallel with the surface and about half way between apex and edge of a cap is all that is required. For the facial cystidia of the gill it is convenient to work with a turgid cap. Fifteen to twenty minutes soaking in water is sufficient. Sections are then made with the razor at right angles to the cap surface so that the gills are cut in transverse section. A small portion of cap flesh just above the attachment of the gills is included in the section as this serves to hold the gill sections together and prevents them from becoming twisted. Such sections are mounted in Cotton Blue when the characteristic 'body' within the facial chrysocystidia stains deeply with the dye (Fig. II F). An alternative method, and one which I strongly recommend, is to use material dried for the herbarium (see later). A small fragment of such material (a few square millimeters) is mounted in 2 per cent. potassium hydroxide and a cover slip placed on. The cover slip is tapped smartly and vertically, for example with the unsharpened end of a pencil, so as to splay out the fragment. When examined under the microscope, any chrysocystidia will show the 'body' deeply coloured yellow.

Wherever possible, herbarium material as well as spore prints should be kept as they are of the greatest value for subsequent comparison. Drying is readily carried out by exposing specimens to a well ventilated source of heat (gas or electric fire) at about 40° C. (104° F.), until more or less brittle. Such material, properly labelled, may be kept in small pay envelopes and should be re-dried out from time to time to prevent attacks from fungi and insects. Once or twice a year is generally sufficient. A few crystals of p-di-chlorobenzene also helps, but it is rather volatile and has to be replaced.

To see marginal cystidia, it is only necessary to mount a short length of gill edge in water. A cover slip is lowered on as carefully as possible so as to exclude air. It may be examined directly under the microscope and then again after splaying out the fragment by tapping as mentioned above for chrysocystidia.

Spore measurements should always be made in water. In spores of *Panaeolus*, in addition to the length, it is now usual to make two width measurements: one with the spore lying on its side, the other with the spore on its edge.

GROUPING. The species are conveniently grouped as follows:

I. *Marginales*. Gills with marginal cystidia only.

1. Appendiculati. Edge of young opening cap more or less appendiculate with the remains of a veil; cap without marginal zone when half dry.
(1) *P. sphinctrinus*, (2) *P. papilionaceus*, (3) *P. campanulatus*, (4) *P. retirugis*.
2. *Nudi*. Edge of young opening cap without remains of appendiculate veil; cap with marginal zone when half dry.
(5) *P. rickenii*, (6) *P. olivaceus*, (7) *P. acuminatus*, (8) *P. fimicola*, (9) *P. sub-balteatus*.

II. *Faciales*. Gills with facial and marginal cystidia.

- (10) *P. semi-ovatus*, (11) *P. phalaenarum*, (12) *P. ater*.

Abbreviations and Terms

Illustrations of the cap shape are given in the text figure.

Cap measurements are given in millimeters; the diameter measurement is the width taken at right angles to the stem. In the case of the stem, the figures before the diagonal (/) are in centimeters, those after are in millimeters. Spore measurements are given in microns (1/1000th of a millimeter).

A moist cap means the cap when water saturated.

esp. = especially;	sl. = slightly;
exc. = excluding;	s.m. = as seen under the micro-
no.(s.) = number(s);	scope;
occ. = occasionally;	sp.(p.) = species (singular and plural).

An asterisk (*) in the Tabular Analysis indicates an illustration in the text figure.

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Explanation of Text Figure

I, *P. rickenii*, fruit bodies $\times \frac{1}{2}$; I B, basidia, view from side and from above, $\times 500$; I C, surface 'scalp' of cap showing cellular-hymeniform cells and one cap cystidium, $\times 500$. II, *ater*, vertical section through cap showing cellular-hymeniform cells of cuticle and cap cystidia in side view, $\times 500$; II F, facial cystidia of gill showing internal 'body' (chrysocystidium), $\times 500$; II M, marginal cystidia of gill, $\times 500$. III, *retirugis* fruit body, $\times \frac{1}{2}$. IV, *sphinctrinus*, fruit bodies: smooth capped form on left, wrinkled-reticulate capped form on right, $\times \frac{1}{2}$. V, *sub-balleatus*, fruit body, $\times \frac{1}{2}$. VI, *acuminatus*, fruit bodies of type (lower one after Cooke's Illustrations), $\times \frac{1}{2}$; VI L, fruit bodies of large form $\times \frac{1}{2}$; VI S, spores $\times 1000$. VII, *campanulatus*, fruit bodies (after Buller), $\times \frac{1}{2}$.

Cap shapes: constricted at (1) or above (1a) middle;
 convex, 2;
 expanded, 3;
 parabolic, 4;
 semi-globate, 5.

Key to British Species

1. Ring absent; stem usually more or less coloured under a white pruina;
 cap variously shaped, often coloured, rarely slightly viscid and then
 only at disc; spores typically more or less limoniform 2
1. Ring present, more or less membranous, sometimes reduced to little more
 than an annular zone; stem smooth below the ring, whitish; cap
 whitish to clay whitish, but not otherwise coloured except in Spring-
 season specimens when it may be tan, parabolic to semi-globate,
 viscid in moist weather but soon drying out and shining; spores
 elliptic-oval 12
2. Cap distinctly olive tinged or some shade of brown varying pale buff
 or tan to almost blackish-brown at least when moist, hygrophanous
 or expallent; included here are all such coloured caps with a
 marginal zone when half dry; cap edge not or hardly over-
 reaching gills in young more or less unopened caps, smooth or
 at most somewhat crenate, never dentate 3
2. Cap whitish, pallid or lead-grey at least when dry, sometimes
 sooty-black when moist, expallent rather than hygrophanous
 with no marginal zone when half dry; cap edge overreaching
 gills in young more or less unopened caps becoming uneven,
 crenate or dentate as cap opens, rarely even 9
3. Cap with marginal zone when half dry, edge even not overreaching gills;
 hygrophanous or strongly expallent species 4



SPECIES	CAP	GILLS
I. MARGINALES. <i>Gills with marginal cystidia only. Spp. 1-9.</i>		
1. Appendiculati. <i>Edge of opening cap more or less appendiculate with remains of veil; cap</i>		
(1)* <i>sphinctrinus</i> (Fr.) Quél.	Semi-globate to parabolic, occ. sl. papillate, 20-30, expallent, sooty-black when moist rarely sl. olive tinged, drying out rapidly to lead-grey, disc occ. pale ochre, smooth or with varying nos. of radially arranged sl. raised veins, sometimes forming a network; edge at least of young cap with fringe of white, delicate, caducous denticles.	broad, ventricose, narrowly sinuous soon falling av
(2) <i>papilionaceus</i> (Bull. ex Fr.) Quél.	Semi-globate to convex, neither hygrophanous nor expallent, whitish, disc often tinged yellow, smooth or variously cracked esp. in hot weather, 20-40, edge at least in young caps, more or less dentate-crenate from remains of fugacious veil.	broad, ventricose
(3)* <i>campanulatus</i> (Fr.) Quél. emend.	Semi-globate 15-30, not hygrophanous, hardly expallent, reddish-brown, smooth, sometimes sl. viscid on disc in wet weather, edge even or somewhat crenate from remains of fugacious veil.	lanceolate, adnate readily falling
(4)* <i>retirugis</i> (Fr.) Gill. <i>sensu</i> Rick.	Semi-globate at first, soon expanding to narrowly convex, hardly expallent, 15-35, pale ochre-brown to pale buff often with slight flesh tint, radially wrinkled or wrinkled reticulate, esp. in older specimens, edge even or sl. crenulate from a fugacious veil.	lanceolate to ven adnate.
2. Nudi. <i>Edge of opening cap without remains of appendiculate veil; cap with margin</i>		
(5)* <i>rickenii</i> Hora nom. nov. = <i>acuminatus</i> <i>sensu</i> Ricken non <i>sensu</i> Fr.	Paraboloid, varying to more or less semi-globate, (5) 10-20, smooth, hygrophanous, pellucid-striate at margin, dark brown to almost black when moist and disc sl. rufescent, drying buff or pale tan.	linear-lanceolate, or less adnate.
(6) <i>olivaceus</i> Møller	Semi-globate becoming more or less convex and broadly umbonate, hygrophanous and often pellucid-striate, 10-25, brownish with distinct olive tinge when moist, drying out clay brown to dirty ochre.	ventricose, broadly adnate.
(7)* <i>acuminatus</i> (Schaeff. ex Secr.) Quél. non <i>sensu</i> Ricken = <i>rickenii</i> Hora Type	Parabolic, more or less constricted above middle, 20-25, expallent, dark brown when moist, drying out to buff or pale tan, edge sl. crenulate.	lanceolate, narrow adnate.
Large form	Semi-globate to convex, constricted at about the middle, apex pointed or rounded, 30-45, expallent, dark brown when moist, often rufescent esp. at disc, drying out to more or less tan, sometimes sl. rugose with faint raised lines at sl. crenulate margin.	ditto.

STEM	SPORES	HABITAT AND TIME OF APPEARANCE	APPROVED FIGURES
<p>l zone when half dry. 7-12/2-3, greyish to brown to almost black, towards base, paler rds.</p> <p>or sl. attenuated from a clavate base, sometimes ose or curved below, 2-3, whitish or at most pinkish below.</p> <p>often sl. curved, (13)/1½-3, concolourous cap.</p> <p>6-10/2-4, pallid above, pinkish downwards, striate.</p> <p>half dry. Spp. 5-9.</p> <p>or sl. bulbous below, 1-2, some shade of pinkish or reddish-brown, r above.</p> <p>from sl. swollen some- times curved base, 4-6/1-2, id above, pale watery- brown below.</p> <p>pering upwards, some- times curved below, 3½-5/1-2, pale above, rather densely brown or reddish- brown below.</p> <p>sometimes sl. flexuous, 13/2-3, pinkish brown to pinkish-brown.</p>	<p>Spp. 1-4. 14-18/10-11½/9-9½, limoniform.</p> <p>14-18/9-11/8-9, limoniform.</p> <p>12-14/9-10/7-8, sub-limoniform.</p> <p>12-14/8-9/7-8, sub-limoniform.</p> <p>13-16/9½-11/9 limoniform.</p> <p>12-15/8-10/7-8 sub-limoniform.</p> <p>12-15/9-11/7-9 limoniform.</p> <p>ditto.</p>	<p>rich meadows and pas- tures, often on dung, common, V-X.</p> <p>pastures, meadows, grassy sides of paths in open woods, not uncommon, VI-X.</p> <p>meadows and pastures, esp. on horse dung, uncommon, VIII-X.</p> <p>grassy places under trees, uncommon, VIII-X.</p> <p>pastures and meadows, often in straight lines or part circles, VII-X, very common.</p> <p>on bare soil, VI-VIII, so far known only from Scotland; rare.</p> <p>meadows and pastures, rare, VIII-X.</p> <p>ditto.</p>	<p>Bres. 894; Wakef. & Denn. 88 (1) (short-stemmed, stout, water-soaked speci- mens).</p> <p>K. & M. 49; Cke. 631 (630).</p> <p>K. & M. 48, exc. spore measurements. Buller, p. 246 (photo).</p> <p>Ricken 69 (6) esp. spore and section; ?Lange 149 (E).</p> <p>Lange 150 (E), <i>acuminatus</i>, Ricken 69 (5), <i>acuminatus</i>, Wakef. & Denn. 78 (2), <i>campanulatus</i>.</p> <p>Møller 3 (i).</p> <p>Cooke 633 (632)A.</p> <p>?Cooke 630 (629), <i>campanu- latus</i> exc. lowest pale fig. = <i>rickenii</i>.</p>

SPECIES	CAP	GILLS	STEM	SPORES	HABITAT AND TIME OF APPEARANCE	APPROVED FIGURES
I. MARGINALES. Gills with marginal cystidia only. Spp. 1-9.						
1. Appendiculati. Edge of opening cap more or less appendiculate with remains of veil; cap more or less half dry. Spp. 1-4.						
(1)* <i>sphinctrinus</i> (Fr.) Quél.	Semi-globate to parabolic, occ. sl. papillate, 20-30, exallant, sooty-black when moist rarely sl. olive tinged, drying out rapidly to lead-grey, disc pale ochre, smooth or with varying nos. of radially arranged sl. raised veins, sometimes forming a network; edge at least of young cap with fringe of white, delicate, caducous denticles.	broad, ventricose, narrow towards margin, soon falling away upwards.	sl. attenuated from a clavate base, sometimes curved below, pinkish below.	14-18/10-11/9-94, limoniform.	rich meadows and pastures, often on dung, common, V-X.	Bres. 894; Wakel. & Denn. 88 (1) (short-stemmed, stout, water-soaked specimens).
(2) <i>papillanaceus</i> (Bull. ex Fr.) Quél.	Semi-globate to convex, neither hygrophanous nor exallant, whitish, disc often tinged yellow, smooth or variously cracked esp. in hot weather, 20-40, edge at least in young caps, more or less dentate-crenate from remains of fugacious veil.	broad, ventricose, adnate.	sl. attenuated from a clavate base, sometimes curved below, pinkish below.	14-18/9-11/8-9, limoniform.	pastures, meadows, grassy sides of paths in open woods, not uncommon, VI-X.	K. & M. 49; Khe. 631 (680).
(3)* <i>campanulatus</i> (Fr.) Quél. emend.	Semi-globate 15-30, not hygrophanous, hardly exallant, reddish-brown, smooth, sometimes sl. viscid on disc in wet weather, edge even or somewhat crenate from remains of fugacious veil.	lanceolate, adnate, readily falling away upwards.	sl. often sl. curved, pinkish below.	12-14/10-10/7-8, sub-limoniform.	meadows and pastures, esp. on horse dung, uncommon, VIII-X.	K. & M. 48, exc. spore measurements. Buller, p. 246 (photo).
(4)* <i>retirugis</i> (Fr.) Gill. sensu Rick.	Semi-globate at first, soon expanding to narrowly convex, hardly exallant, 15-35, pale ochre-brown to pale buff often with slight flesh tint, radially wrinkled or wrinkled reticulate, esp. in older specimens, edge even or sl. crenulate from a fugacious veil.	lanceolate to ventricose, adnate.	sl. 6-10/2-4, pallid above, pinkish downwards, striate.	12-14/8-9/7-8, sub-limoniform.	grassy places under trees, uncommon, VIII-X.	Ricken 69 (6) esp. spore and section; ?Lange 149 (E).
2. Nudi. Edge of opening cap without remains of appendiculate veil; cap with marginal zone when half dry. Spp. 5-9.						
(5)* <i>rickenii</i> Hora nom. nov. = <i>acuminatus</i> sensu Ricken non sensu Fr.	Paraboloid, varying to more or less semi-globate, (3) 10-30, smooth, hygrophanous, pellucid-striate at margin, dark brown to almost black when moist and disc sl. rufescent, drying buff or pale tan.	linear-lanceolate, adnate or less adnate.	sl. or sl. bulbous below, 3-4/1-2, some shade of pink or reddish-brown, rather above.	13-16/9/11/10 limoniform.	pastures and meadows, often in straight lines or part circles, VII-X, very common.	Lange 150 (E), <i>acuminatus</i> , Ricken 69 (5), <i>acuminatus</i> , Wakel. & Denn. 78 (2), <i>campanulatus</i> .
(6) <i>olivaceus</i> Moller	Semi-globate becoming more or less convex and broadly umbonate, hygrophanous and often pellucid-striate, 10-25, brownish with distinct olive tinge when moist, drying out clay brown to dirty ochre.	ventricose, broadly adnate.	ball from sl. swollen sometimes curved base, 4-6/1-2, pallid above, pale watery-brown below.	12-15/8-10/7-8 sub-limoniform.	on bare soil, VI-VIII, so far known only from Scotland; rare.	Moller 3 (i).
(7)* <i>acuminatus</i> (Schaeff. ex Secr.) Quél. non sensu Ricken = <i>rickenii</i> Hora Type	Parabolic, more or less constricted above middle, 20-25, exallant, dark brown when moist, drying out to buff or pale tan, edge sl. crenulate.	lanceolate, narrowly adnate.	sl. tapering upwards, sometimes curved below, 3-5/3-4, pale above, rather suddenly brown or reddish-brown below.	12-15/9-11/7-0 limoniform.	meadows and pastures, rare, VIII-X.	Cooke 633 (632) A.
Large form	Semi-globate to convex, constricted at about the middle, apex pointed or rounded, 30-45, exallant, dark brown when moist, often rufescent esp. at base, drying out to more or less tan, sometimes sl. rugose with faint raised lines at sl. crenulate margin.	ditto.	sl. sometimes sl. flexuous, 4-12/2-3, pinkish brown to blackish-brown.	ditto.	ditto.	?Cooke 630 (629), <i>campanulatus</i> exc. lowest pale fig. = <i>rickenii</i> .

SPECIES	CAP	GILLS
(8) <i>fimicola</i> (Fr.) Quél. <i>sensu</i> Lange	Semi-globate, often sl. papillate, 15-30, drying out paler and with distinct greyish shade.	linear-lanceolate, broadly adnate.
(9)* <i>sub-balteatus</i> (B. & Br.) Sacc.	Conico-semiglobate at first, expanding to almost flat and then 30-50 and umbonate, expallent, reddish-brown when moist, drying out buff to tan with distinct coppery tinge; marginal belt unusually persistent.	lanceolate elliptic narrowly adnate pinkish tan w. young.
II. FACIALES. <i>Gills with facial and marginal cystidia.</i> Spp. 10-12.		
(10) <i>semi-ovatus</i> Lundell & Nannfeldt	Ovate to semi-globate, 20-60, neither hygrophanous nor expallent, viscid in wet weather soon drying out, shining when dry, smooth, cracked or wrinkled, clay-whitish varying clay-brown to pale ochre (spring forms often dark tan), edge usually appendiculate-crenate.	lanceolate-ovate, narrowly adnate
Small forms	Cap less than 20.	lanceolate-ovate, narrowly adnate.
(11) <i>phalaenarum</i> (Fr.) Quél.	Ovate to semi-globate, 35-80 (90), neither hygrophanous nor expallent, viscid in wet weather, soon drying out, shining when dry, smooth, whitish or with very faint yellow tinge, edge smooth, distinctly overreaching gills.	lanceolate-ovate, narrowly adnate.
(12) <i>ater</i> (Lange) Kühn.-Romagn.	Semi-globate to convex umbonate, 15-45, expallent, dark almost blackish-brown when moist, disc often rufescent, drying out to buff or pale tan, smooth or sl. rugose, edge even, not overreaching.	ovate, adnate.

3. Cap never with marginal zone, edge often slightly overreaching gills, even to somewhat crenate-lacerate, semi-globate to convex 15-30, weakly expallent, varying reddish-brown to pale tan or buff, sometimes with slight flesh tint, rarely viscid and then only at disc, smooth or more or less radially wrinkled or wrinkled-reticulate with raised veins especially in older specimens (mainly on horse dung)

4. Moist cap brownish with distinct olive tinge, margin often pellucid-striate, drying out pale tan with disc more or less ochre, semi-globate expanding slightly to convex-umbonate (Scotland)
P. olivaceus (6)

4. Cap without olive tinge at any time
5. Stem more than four times as long as cap diameter; cap (5) 10-20 typically paraboloid, at times convex but never expanded, occasionally slightly umbonate, hygrophanous, dark brown to almost blackish-brown when moist and margin pellucid-striate, drying out more or less tan, often rufescent at disc
P. rickenii (5)

5. Stem less than four times cap diameter, cap expallent rather than hygrophanous, hence margin not or obscurely pellucid-striate when moist

6. Cap finally expanded umbonate, coppery-brown when moist drying out to paler reddish-brown with unusually persistent marginal

STEM	SPORES	HABITAT AND TIME OF APPEARANCE	APPROVED FIGURES
6-8/2, pale pinkish-brown below, pale. to pallid above.	11-14/7-8, distinctly grey s.m. ovate elliptic, sl. flattened on one side.	grassland, uncommon, VIII-X.	Lange 150 (F).
from sl. bulbous curved, 6-9/3-5, everywhere fibrillose, coppery-brown, darker below.	12-14/7½-8½/6½-7½, limoniform.	sub-fasciculate in manured places, esp. rotting vegetable remains, uncommon, VI-X.	Lange 149 (H); Ricken 69 (1); Møller 75 (uncoloured).
erect upwards from sub-bulbous base, 5-15/4-8, whitish to pallid, both below the white membranous ring or annular zone.	16-20/9-12, ovate-elliptic.	in meadows and pastures on dung, common, VI-XI.	Lange 142 (F, F ¹), sub <i>Stropharia</i> ; Cooke 623 (623), sub <i>Stropharia</i>
1-4/1-1½, whitish both; ring membranous, reduced to annular zone.	16-18/9-10, ovate-elliptic	ditto.	Lange 142 (E), sub <i>Stropharia</i> .
erect upwards from sub-bulbous base, 5-15/4-8, whitish to pallid, both; ring absent.	16-20/9-12, ovate-elliptic.	in grassy places on dung and on manured soil, uncommon, VIII-X.	Ricken 69 (4); Cooke 626 (625), <i>fimiputris</i> .
2-8.5/2-4, tan to dark brown below, much paler above.	10-14/7-8, sub-limoniform.	in poor grassy places often under trees, not uncommon, IV-VI (VII), (VIII) IX-XI.	Ricken 69 (2), <i>fimicola</i> , Lange 150 (G), as var. (small specimens).

zone 25-50; stem stout 3-5 millimeters diameter, silky fibrillose and more or less pinkish-brown; often 2-3 plants growing from same point *P. sub-balteatus* (9)

6. Cap never expanding to more than convex, coppery tinge absent; stem less than 3 millimeters diameter, not silky fibrillose; plants typically growing singly 7

7. Moist cap dark brown to almost black, pale tan when dry commonly with rufescent disc (10) 15-45, semi-globate to convex often more or less umbonate; marginal chrysocystidia always present¹ *P. ater* (12)

7. Not this species; chrysocystidia always absent 8

8. Cap semi-globate, at times slightly papillate 15-30 uniformly brownish-sepia when moist, drying out paler and then with distinct greyish tinge; spores tinged grey under the microscope *P. fimicola* (8)

8. Cap never semi-globate, always more or less constricted at or above the middle, rarely with almost straight sides 22-45, dark brown when moist drying out to pale buff and then sometimes more or less rufescent, edge often somewhat crenulate; spores dark bistre under the microscope *P. acuminatus* (7)

¹ Until this species is known, it should be confirmed by searching for the chrysocystidia.

SPECIES	CAP	GILLS	STEM	SPORES	HABITAT AND TIME OF APPEARANCE	APPROVED FIGURES
(8) <i>fimicola</i> (Fr.) Quél. <i>sensu</i> Lange	Semi-globate, often sl. papillate, 15-30, drying out paler and with distinct greyish shade.	linear-lanceolate, broadly adnate.	sl. 6-8/2, pale pinkish-brown below, pale, to pallid upwards.	11-14/7-8, distinctly grey s.m. ovate-elliptic, sl. flattened on one side.	grassland, uncommon, VIII-X.	Lange 150 (F).
(9)* <i>sub-balteatus</i> (B. & Br.) Sacc.	Conico-semiglobate at first, expanding to almost flat and then 30-50 and umbonate, exapallent, reddish-brown when moist, drying out buff to tan with distinct coppery tinge; marginal belt unusually persistent.	lanceolate-elliptic, narrowly adnate, pinkish tan when young.	sl. from sl. bulbous curved base, 6-9/3-5, everywhere silky fibrillose, coppery-brown, darker below.	12-14/7½-8½/0-7½, limoniform.	sub-fasciculate in maturated places, esp. rotting vegetable remains, uncommon, VI-X.	Lange 149 (H); Ricken 69 (I); Möller 75 (uncoloured).
II. FACIALES. Gills with facial and marginal cystidia. Spp. 10-12.						
(10) <i>semi-ovatus</i> Lundell & Nannfeldt	Ovate to semi-globate, 20-60, neither hygrophanous nor exapallent, viscid in wet weather soon drying out, shining when dry, smooth, cracked or wrinkled, clay-whitish varying clay-brown to pale ochre (spring forms often dark tan), edge usually appendiculate-crenate.	lanceolate-ovate, broadly adnate, narrowly adnate.	expanding upwards from sub-bulbous base, 5-15/4-8, rigid, smooth below the white membranous ring or annular zone.	10-20/9-12, ovate-elliptic.	in meadows and pastures on dung, common, VI-XI.	Lange 142 (F, F ₁), <i>sub Stropharia</i> ; Cooke 623 (623), <i>sub Stropharia</i>
Small forms	Cap less than 20.	lanceolate-ovate, broadly adnate, narrowly adnate.	sl. 1-4/1-1½, whitish smooth; ring membranous, or reduced to annular zone.	10-18/9-10, ovate-elliptic.	ditto.	Lange 142 (E), <i>sub Stropharia</i> .
(11) <i>phalaenarum</i> (Fr.) Quél.	Ovate to semi-globate, 35-80 (90), neither hygrophanous nor exapallent, viscid in wet weather, soon drying out, shining when dry, smooth, whitish or with very faint yellow tinge, edge smooth, distinctly overreaching gills.	lanceolate-ovate, broadly adnate, narrowly adnate.	expanding upwards from sub-bulbous base, 5-15/4-8, rigid, whitish to pallid, smooth; ring absent.	16-20/9-12, ovate-elliptic.	in grassy places on dung and on maturated soil, uncommon, VIII-X.	Ricken 69 (4); Cooke 626 (625), <i>fimiputris</i>
(12) <i>ater</i> (Lange) Kühn.-Romagn.	Semi-globate to convex umbonate, 15-45, exapallent, dark almost blackish-brown when moist, disc often rufescent, drying out to buff or pale tan, smooth or sl. rugose, edge even, not overreaching.	ovate, adnate.	sl. 2-8½/2-4, tan to dark fawn below, much paler upwards.	10-14/7-8, sub-limoniform.	in poor grassy places often under trees, not uncommon, IV-VI (VII), (VIII) IX-XI.	Ricken 69 (2), Lange 150 (G), as var. (small specimens).

3. Cap never with marginal zone, edge often slightly overreaching gills, even to somewhat crenate-lacerate, semi-globate to convex 15-30, weakly exapallent, varying reddish-brown to pale tan or buff, sometimes with slight flesh tint, rarely viscid and then only at disc, smooth or more or less radially wrinkled or wrinkled-reticulate with raised veins especially in older specimens (mainly on horse dung)
4. Moist cap brownish with distinct olive tinge, margin often pellucid-
striate, drying out pale tan with disc more or less ochre, semi-globate expanding slightly to convex-umbonate (Scotland)
P. olivaceus (6)
4. Cap without olive tinge at any time
5. Stem more than four times as long as cap diameter; cap (5) 10-20 typically paraboloid, at times convex but never expanded, occasionally slightly umbonate, hygrophanous, dark brown to almost blackish-brown when moist and margin pellucid-striate, drying out more or less tan, often rufescent at disc
P. richiensii (5)
5. Stem less than four times cap diameter, cap exapallent rather than hygrophanous, hence margin not or obscurely pellucid-striate when moist
6. Cap finally expanded umbonate, coppery-brown when moist drying out to paler reddish-brown with unusually persistent marginal

zone 25-50; stem stout 3-5 millimeters diameter, silky fibrillose and more or less pinkish-brown; often 2-3 plants growing from same point
P. sub-balteatus (9)

6. Cap never expanding to more than convex, coppery tinge absent; stem less than 3 millimeters diameter, not silky fibrillose; plants typically growing singly
7. Moist cap dark brown to almost black, pale tan when dry commonly with rufescent disc (10) 15-45, semi-globate to convex often more or less umbonate; marginal chrysocystidia always present!
P. ater (12)
7. Not this species; chrysocystidia always absent
8. Cap semi-globate, at times slightly papillate 15-30 uniformly brownish-sepia when moist, drying out paler and then with distinct greyish tinge; spores tinged grey under the microscope
P. fimicola (8)
8. Cap never semi-globate, always more or less constricted at or above the middle, rarely with almost straight sides 22-45, dark brown when moist drying out to pale buff and then sometimes more or less rufescent, edge often somewhat crenulate; spores dark bistre under the microscope
P. acuminatus (7)

* Until this species is known, it should be confirmed by searching for the chrysocystidia.

9. Stem dark greyish-brown to almost black, paler upwards; cap parabolic to semi-globate, often bluntly papillate, expallent, sooty-black when moist, rapidly drying out to lead-grey, disc at times pale ochre; edge at least of young opening caps, conspicuously fringed with white caducous, delicate denticles *P. sphinctrinus* (1)
9. Stem predominantly whitish, at most tinged flesh colour below; cap neither hygrophphanous nor expallent, more or less concolourous with stem, or disc slightly ochre 10
10. Cap 20-30, semi-globate to convex, whitish or disc tinged ochre, smooth or cracking especially in dry weather; edge more crenate than dentate, not or hardly overreaching gills; chrysocystidia absent *P. papillionaceus* (2)
10. Cap 35-80 (90), parabolic to semi-globate, uniformly whitish or with very faint yellow tinge, edge even distinctly overreaching gills; chrysocystidia present *P. phalaenarum* (11)
11. Cap semi-globate 15-30, reddish-brown, smooth, sometimes slightly viscid at disc in wet weather; typically on horse dung in meadows and pastures *P. campanulatus* (3)
11. Cap soon expanding to convex 15-35, pale buff or pale tan sometimes with slight flesh tint, more or less radially wrinkled with faintly raised ribs especially in older specimens; typically on dung under trees *P. retirugis* (4)
12. Cap 20-60 (80) *P. semi-ovatus* (10)
12. Cap less than 20. small forms of *P. semi-ovatus*

Index and Notes

In the following alphabetical list, the author citation is for the binomials under the genus *Panaeolus*, except in the case of *scitula* Massee.

acuminatus (Schaeef. ex Secr.) Quél., 7. In the Tabular Analysis, specimens described as 'Type' represent the Friesian concept as well depicted in Cooke's *Illustrations* 633 (632) A. In the course of this work, I have found specimens which I am unable to separate from the type other than by size, and have, accordingly, referred to them as 'Large form'. Fries himself, both in the *Epicrisis* and the *Hymenomyces Europaei*, makes reference to longer stemmed forms. See *rickenii* Hora nom. nov.

ater (Lange) Kühn.—Romagn. (*P. fimicola* var. *ater* Lange), 12. The presence of chrysocystidia makes this fully worthy of specific rank. I have known the species since 1947 when I sent specimens to A. A. Pearson, who named them *fimicola*, pointing out at the same time that this was the traditional British interpretation but hardly the Friesian. The British tradition coincides with Ricken's interpretation of *fimicola*, who also noted its early appearance. Recently, Imler (1951) has described and figured the chrysocystidia of *fimicola* sensu Ricken. This confirms my view that *fimicola* sensu Ricken is the same thing as *ater*. Spring specimens are usually smaller and with an unexpanding semi-globate cap as compared with autumn ones. Much observation, especially of specimens from the same locality, has convinced me that these seasonal variations have no taxonomic significance. In my experience, the chrysocystidia are not numerous and a careful search should be made in more than one mount. The first published British record is, I believe, that due to Parker-Rhodes (1951) as a variety of *fimicola*. He later (1954) held it to be worthy of specific rank.

caliginosus (Jung.) Gill. This continues to remain a dubious species. A prevalent view is that it represents what I have here re-named as *rickenii*. Fries who, admittedly, had never himself collected the species, placed it in his section of the genus characterised by having no marginal zone. *P. rickenii*, however, is always strongly zoned.

campanulatus (Fr.) Quél., emend., 3. Much confusion centres round this species. It is commonly regarded as identical with or, at most, a variety of *sphinctrinus*. As pointed out by Kühner and Romagnesi (1953), this is hardly consistent with Fries' description of the veil of *campanulatus* as 'fugacious often absent'

(*Monographia*) and 'very fugacious' (*Hymenomycetes Europae*). Moreover, the colours of stem and cap are always referred to as reddish-brown: I have never seen such colours in *sphinctrinus*—a species which is particularly easy to determine in complete concordance with the Friesian descriptions. I have based my own determinations on the account given in Buller (1922) which has the merit of nowhere being inconsistent with the views of Fries. I think it possible that its present relative infrequency may result from the decrease in the horse population, for it seems to me to be a species essentially dependent on horse dung. Kühner and Romagnesi note a smell of burnt sugar in their *campanulatus*. See *retirugis*.

cinctulus (Bolton) Sacc. This was referred by Cooke to *fimicola* as a variety. The only record since Bolton's time is that by Parker-Rhodes (1951) from Skokholm Island. It seems to me to be nothing more than *ater*; nor is Bolton's own plate at variance with this view.

egregius Mass. Never re-found. The description and Cooke's *Illustration* 624 (624) strongly suggest a species of *Hypholoma*.

fimicola (Fr.) Quél., 8. Variouslly interpreted. Ricken's *fimicola* is *ater*. I have followed Lange's concept which conforms fairly well with the Friesian one but, like others, I have not found it to be a particularly dung-inhabiting species so that the specific epithet is not very appropriate.

fimiputris (Bull. ex Fr.) Quél. I believe this to be nothing more than a small form of *semi-ovatus* with the ring reduced to little more than a zone. Such forms are not uncommon and are characteristic of many dung-inhabiting species: but they run into one another. Cooke's *Illustration* 627 (626) was named *phalaenarum* (*sic*) in error, as pointed out by Massee, and was intended to represent *fimiputris*. I have often seen small forms of *semi-ovatus* which are well represented by this plate.

leucophanes (B. & Br.) Mass. The original description and Cooke's *Illustration* 625 (927) strongly suggest a form of *semi-ovatus* in which the ring has been incompletely separated: part remaining on the cap edge, part carried up on the stem as a series of transverse zones.

olivaceus Möller in *Fungi of the Faeröes*, 6. Copenhagen, 1945. I am indebted to Mr. P. D. Orton for this record.

papilionaceus (Bull. ex Fr.) Quél., 2.

phalaenarum (Fr.) Quél., 11. Cooke's *Illustration* 626 (625) represents this species but, as pointed out by Massee, was labelled *fimiputris* in error. Specimens corresponding with *phalaenarum* are occasionally met with, but I am not yet satisfied that they represent anything more than a ringless form of *semi-ovatus*. The development of the ring varies greatly in *semi-ovatus*; *phalaenarum* also has chrysocystidia. The species is retained by Kühner and Romagnesi (1953).

retirugis (Fr.) Gill., 4. No clear conception of this species has yet emerged. In our lists it probably always refers to wrinkled or wrinkled-reticulate forms of *sphinctrinus*. I have, however, collected specimens agreeing very closely with Ricken's *retirugis*, and this is the interpretation given here. I am not, however, satisfied that this interpretation is really distinct from my *campanulatus*. The only differences are the expanding cap and its wrinkles. Buller (1922) noted that specimens of his *campanulatus* (and I have followed his interpretation), when cultured in the laboratory on sterile horse dung, often showed an expanded cap and he thought this might be due to reduced transpiration. There remains the wrinkling. Since smooth and wrinkled caps are found in *sphinctrinus*, I think it possible the same thing may happen with *campanulatus*. In this connection it is interesting to note that Kühner and Romagnesi (1953) cite Lange's plate (149E) of his *retirugis* as illustrating their conception of *campanulatus* (but they give significantly longer spores than does Lange). This indicates that these authors also interpret *campanulatus* as taking in forms with smooth and wrinkled caps. I incline to the view that *retirugis* sensu Ricken and *retirugis* sensu Lange are not really distinct from one another and probably represent forms of my *campanulatus*. However, until I have seen more material, I prefer to keep *retirugis* sensu Ricken as a separate species.

rickenii Hora nom. nov., 5. Hitherto this has generally been determined as *acuminatus* sensu Ricken non sensu Fries. In our own lists it probably hides most frequently under the name *campanulatus* and this is the interpretation of Wakefield and Dennis (1950). Having found *acuminatus* sensu Fries, another name became necessary for the species commonly known under that epithet. I had hoped *caliginosus* (see above) would serve, but as Fries regarded this as a non-zoned species, it will not do for one in which the zoning is particularly evident. I have therefore been compelled to make a new name.

(*scitula*. Massee published this first under *Agaricus* (*Panaeolus*) and finally under *Anellaria*. It is a peronate species of *Coprinus* and probably exotic as it grew in a pot.)

semi-ovatus Lundell and Nannfeldt, 10.

separatus (L. ex Fr.) Quél. In the *Systema*, Fries quoted this epithet as a synonym for *semi-ovatus* so that, by the Rules, the latter has clear priority.

sphinctrinus (Fr.) Quél., 1.

sub-balteatus (B. & Br.) Sacc. As pointed out by Lange, Cooke's *Illustration* 632 (631) shows far too slender specimens.

FIELD NOTES

Truffles in a Plant-pot.—In late March I received from Miss Jean Wilkinson two specimens of a fungus given to her by Miss M. C. Walker of Stainsacre near Whitby. The specimens were found amongst soil in a plant-pot in which a seedling pine was growing and were discovered when the seedling, now over two feet tall, was being transplanted into a larger pot. Examination showed them to be truffles and to agree, save in the frequent occurrence of four-spored asci, with Dr. Lilian E. Hawker's description of *Tuber maculatum* Vitt. (British Hypogeous Fungi: *Phil. Trans. Roy. Soc. B.*, **237**, 487, 1954). Dr. Hawker has since seen the specimens and confirmed the identification. On further enquiry I was informed that the pine seed was collected at Glaisdale and grown in local garden soil to which leaf mould from Dibble Bridge Wood near Castleton had been added.

The only truffle record in the *Catalogue of Yorkshire Fungi* is one for *Tuber aestivum* Vitt. based on the entry in Lees' *Flora of West Yorkshire* (1888), and this is queried by Massee and Crossland (*Fungus Flora of Yorkshire*, 242, 1905) as perhaps a mistake for the commoner *Elaphomyces*. *Tuber maculatum* is recorded by Hawker (*loc. cit.*) for Gloucester, Hereford, Somerset, Devon, Sussex, Suffolk and Perthshire. She informs me that there are other references to the occurrence of hypogeous fungi in pots, while *Hymenogaster albus* (Klotzsch) Berk. & Br. is known in this country only from a single such occurrence.—W. A. SLEDGE.

***Chrysopa abbreviata* Curtis (Neuroptera : Chrysopidae) in Yorkshire.**—Recently (*The Naturalist*, 1957, 18) I stated that few additions could be expected to the Yorkshire Neuroptera as the order has been relatively well worked in the county. One species which might be expected to occur, because of its known distribution, is *Chrysopa abbreviata* Curtis, and I am pleased to be able to report a specimen taken by Mr. John Wood at Strensall Common on July 9th, 1949. This species is decidedly local in distribution and is generally confined to coastal sandhills, but occasionally it has been recorded inland (Killington, 1937, *British Neuroptera* **2**, 212). It is known from the Lancashire coast at Freshfield (31/5/1936, H. Britten; 15-17/5/1948, W. D. Hincks) and there is an old inland record from Bowden, Cheshire (B. Cooke, *The Naturalist*, 1882, 111). In addition it has been taken more recently in Cheshire at New Brighton (H. H. Higgins, in Liverpool Museum), the specimen probably having been destroyed as a result of enemy action during the war. This species is easily distinguished from its allies by the large angular tooth or process at the base of the claws.—W. D. HINCKS.

THE GASTEROMYCETES IN JAMES NEEDHAM'S HERBARIUM

J. T. PALMER

THE true identities of old records are often doubtful and we usually have to accept these names in good faith, although we may have secret doubts. The discovery of Needham's collection in the possession of the Hebden Bridge Literary and Scientific Society was, therefore, of great interest, particularly as it has made possible the solving of such puzzling records as '*Lycoperdon flavosum* Oed.' and *Hymenogaster klotzschii* Berk. & Br.

There are twenty-three collections of Gasteromycetes. Two are so severely ravaged by insects that it is only possible to guess at their identities; seven are correctly named and fourteen are misdetermined. There are the common misconceptions such as *Lycoperdon perlatum* var. *nigrescens* Pers. (= *L. nigrescens* (Pers.) Lloyd) being determined as *L. echinatum* Pers. and *L. hoylei* Berk. & Br., and forms of *Scleroderma aurantium* Pers. as *S. verrucosum* [Vaill.] Pers. The puffballs (*Bovista*, *Calvatia* and *Lycoperdon*) have been much confused, whilst a collection labelled *Scleroderma geaster* Fr. consists of unexpanded eggs of *Gaeastrum triplex* Jungh. This is rather novel as specimens of *S. geaster* often turn out to be peridia of *S. aurantium* which, accidentally trodden upon by some person or animal, have fissured stellately!

Many of the collections have specimens firmly glued to labelled cardboard sheets, which rather disposes of the possibility of specimens having been mixed. They have now been sorted and repacked in transparent envelopes, whilst all severely insect-damaged material has been discarded.

NOMENCLATURE

As the gasteromycetes have received little serious study in this country, some changes of nomenclature are inevitable. Persoon's puffballs in the Rijksherbarium, Leiden, were recently studied by Perdeck (1950), who reintroduced Persoon's epithet as *Calvatia excipuliformis* (Pers.) Perdeck for *C. saccata* (Vahl ex Fr.) Morgan and *L. perlatum* var. *nigrescens* Pers. However, he used *Calvatia bovista* (Pers.) Th. C. E. Fries, a later homonym of *C. bovista* (L. ex Fr.) McBride, which, in turn, is a synonym of *C. gigantea* (Pers.) Lloyd. Lange (1953) considered the valid name to be *L. bovista* Pers. or *C. caelata* (Bull.) Morg. if one regarded *Calvatia* as a good genus, whilst Eckblad (1955) called it *C. utriformis* (Bull. ex Pers.) M. Moser. The author (1957) considers *G. recolligens* (Woodw. ex Sow.) S. F. Gray to be the valid name for *Gaeastrum mammosum* Chev., and it is inevitable that, as demonstrated by Kambly and Lee (1936), *Crucibulum levis* (DC.) Kambly is the correct name for the fungus so commonly known as *C. vulgare* Tul.

HYMENOGASTRALES

Hymenogaster tener Berk. & Br. (Single collection.)

Pecket Wood, Hebden Bridge, 18/9/1899, det. *H. klotzschii* Tul. (Masseé and Crossland, 1902). Consists of several blackened peridia in a dry tube formerly containing formalin. Using the recent monographs of Hawker (1954) and Lange (1956), a 'squash' of hymenium suggested *H. tener*, which was confirmed by Dr. Hawker, to whom material was submitted. She regards *H. klotzschii* as a synonym of *H. albus* (Klotsch) Berk. and Br., and writes that the spores of the Needham specimens are smaller than of a typical *H. tener* and resemble those which she has attributed to *H. tener* var. *mutabilis* Soehner. The only authentic British collection of *H. albus* was made in the Botanic Garden, Glasgow (Hawker, 1954).

LYCOPERDALES

Bovista nigrescens Pers. (Two collections.)

In a pasture, Green Hirst, Crimsworth Dean, Hebden Bridge, 2/10/1897. A fully matured, correctly named specimen.

Crimsworth Dean, 22/10/1910. A rather large specimen collected whilst immature (of which the gleba has partly matured) determined as *Lycoperdon bovista* L. (= *Calvatia gigantea*) which, with its smooth, white exoperidium, it superficially resembles.

Calvatia caelata (Bull.) Morg. (Two collections.)

Crimsworth Dean, Hebden Bridge, Aug., 1902, det. *Lycoperdon gemmatum*

Batsch (= *L. perlatum* Pers.) although there is also a badly discoloured label with the partly legible name of *L. saccatum* Batsch. A mature specimen.

Crimsworth Dean, Hebden Bridge, Sept., 1904 (and 1910). Consists of immature specimens labelled *L. saccatum* (= *C. excipuliformis*).

Calvatia excipuliformis (Pers.) Perdeck. (Two collections.)

Amongst grass, Pecket Wood, Hebden Bridge, 23/12/1902. This collection consists of both old and immature (glebae imperfectly matured after collection) specimens. Notes with the collection state: 'These are old specimens' (although this is not borne out by the presence of immature peridia) and that the original specimen, collected in August, 1902, representing the first British record of *Lycoperdon favosum* Oudem., was sent to C. Crossland. There is a letter dated 16/12/02 from George Massee stating: 'Your puffball is *Lycoperdon favosum* Oudem. which has not been collected in Britain before. It is nearest to *L. perlatum* and is a very nice addition to our Flora.' In a postscript, he adds: 'We have Dutch specimens from the author, so you had better keep your specimen for some local place.' It seems that on receiving the letter Needham returned to the locality and found the present specimens. It was interesting to note that, in addition to the name *L. favosum* Oudem., there is a label '*L. flavosum* Oed.' over which is glued another label '*L. favosum* Oed. New British Record. Needham.'

'*L. flavosum* Oed.' was recorded by Crossland (1903) and amplified by Massee and Crossland (1905), who stated that Bolton's Tab. 117 has a figure much resembling this species. Mason (1928) attempted to solve the mystery of '*L. flavosum* Oed.' and, after being unable to trace the name in literature (which is not surprising), was informed by Miss Wakefield that they knew nothing about it at Kew and no specimen was preserved in Crossland's Herb. He removed it from the Yorkshire list.

Perdeck (1950) was unable to trace the only specimen of *L. favosum* Oudem. (found by Rick at Valkenburg in 1900) but considered it to be *C. excipuliformis* differing only by the indented stem with some big spines in each dent. In view of this and Massee's letter mentioning authentic specimens, the author communicated with Dr. Dennis who writes that there are no specimens under this name at Kew.

Whilst the old specimens are quite smooth, two of the immature specimens have dried up, long, curved, connivent spines in the hollows of their sterile bases. Taking a broad species concept, they would appear to be *C. excipuliformis*, but the species is very variable and there is no doubt that it requires further study.

Pecket Wood, Hebden Bridge, Sept., 1911 and 1912, det. *L. caelatum* (= *Calvatia caelata*). All identifiable parts are eaten away except for a few large connivent spines on the upper part of the sterile base suggesting that they were immature specimens of *L. excipuliformis*. They are certainly not *C. caelata*.

Lycoperdon perlatum Pers. var. *perlatum*. (One collection.)

Pecket Wood, Hebden Bridge, Sept., 1912, det. *L. perlatum*.

Lycoperdon perlatum var. *nigrescens* Pers. (Three collections.)

Both collections from Pecket Wood, Hebden Bridge, Aug., 1894, and April, 1903, det. *L. echinatum* Pers.: there is a notation under this name in Massee and Crossland (1902)—'S.W.—Among dead leaves, Pecket Wood, Hebden Bridge.'

This is a common mistake, and the author has seen no material of the true *L. echinatum* (which has long, angular, caducous spines up to 2 mm. long, a purplish gleba and prominently warted spores) from the north. If this fungus is to be considered of specific rank, another trivial name must be sought as *L. nigrescens* (Pers.) Lloyd is a later homonym of *L. nigrescens* (Pers.) Vitt., which is a synonym of *Bovista nigrescens* Pers.

Egton Bridge, Arncliffe (Y.N.U. Foray, 28/9/1902), det. *L. hoylei* Berk. and recorded by Massee and Crossland (1902). *L. hoylei* was separated from *L. echinatum* by Berkeley and Broome (1871) solely by the lilac spore mass. Massee (1889) added the compact subgleba as a further distinguishing character, although Berkeley and Broome indicated a cellular one.

Lycoperdon pyriforme Schaeff. ex Pers. (Two collections.)

By the side of the Hebden, Foster Mile, Hebden Bridge, 8/9/1909, identified as *Bovista pusilla* (Fr.) De Toni. The specimens are immature but quite un-

mistakable. Massee and Crossland (1902) record *B. pusilla* as 'Near Hebden Bridge'. Mason (1928) referred the species to *Lycoperdon*.

Foundry Yard, Foster Mile, Hebden Bridge, Sept., 1903, identified as *L. gemmatum* (= *L. perlatum* Pers.). Quite typical, fully matured specimens. *Geastrum recolligens* (Woodw. ex Sow.) S. F. Gray. (One collection.)

King's Lynn, Norfolk, 13/9/1897, leg. C. B. Plowright, det. *Tulostoma mammosa* Fr. (sic.)! Although not a Yorkshire record, the collection is of interest as Cooke (1937) gave the only definite Norfolk locality as being Crostwick. The species has been found in Wensleydale.

Geastrum triplex Jungh. (Two collections.)

Campsall Woods, Sutton, Sept., 1899, correctly diagnosed under the synonym *Geastrum Michelianus* W. G. Smith and so recorded in Massee and Crossland (1902). The specimen, whilst fully expanded, has an aborted gleba.

The Terrace, Lievaux Abbey, Helmsley (Y.N.U. Fungus Foray), 26th Sept. to 1 Oct., 1903, identified as *Scleroderma geaster* Fr. The collection consists of sectioned, typical 'eggs' of *G. triplex*, which is one of the few species whose 'eggs' develop epigeously rather than immersed in the substrate. Massee and Crossland (1902) list *S. geaster* for Malton and Scarborough.

SCLERODERMALES

Scleroderma aurantium Pers. (Three collections.)

No date or locality. Correctly identified under the synonym of *S. vulgare* Fr. Mature specimens.

Two collections from High Greenwood, Hebden Bridge, Sept., 1910 and 1912, both identified as *S. verrucosum*. Mature specimens.

NIDULARIALES

Crucibulum levis (DC) Kambly. (One collection.)

On twigs, Rockley Dam, near Barnsley (Y.N.U. Foray) 20th Sept., 1897, correctly named under the synonym *C. vulgare* Tul., with which we are more familiar. Recorded in Massee and Crossland (1902). The tunica of many peridioles has been eaten away by insects, thus exposing the greyish black cortex.

Cyathus olla Pers. (One collection.)

On herbaceous stems, Selby Foray (undated), correctly determined under the synonym *C. vernicosus* DC.

Cyathus striatus Pers. (One collection.)

On buried, decaying wood, Selby Foray, 22/9/1896, identified as *C. striatus*. Massee and Crossland (1902) record 'S.E.—Escrick (Selby F.F., 1896).'

Sphaerobolus stellatus Pers. (One collection.)

High Greenwood, Hebden Bridge, Sept., 1912. The twiggy substrate shows traces of insect activity but nothing of *Sphaerobolus*.

The author thanks Mr. Roy Watling for bringing the collection to his attention.

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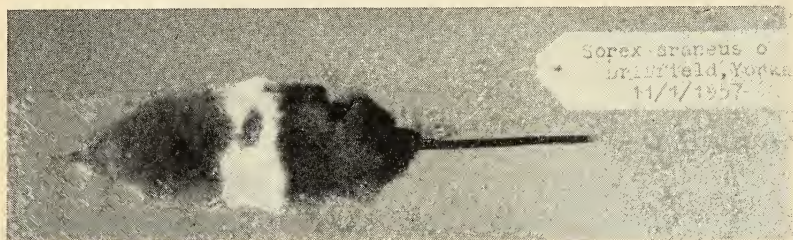
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A REMARKABLE PIED COMMON SHREW (*SOREX ARANEUS* LINN.)

DAVID L. HARRISON, F.Z.S.

THE photograph illustrates a very unusual Common Shrew recently sent to the author for examination by Mr. A. Hazelwood of Bolton Museum. It is a female, obtained at Driffield in Yorkshire on January 11th, 1957. It is in winter dress, the pelage of the anterior and posterior parts of the body being normal for that season, apart from a small whitish tip to the tail. The entire middle region is however encircled by a sharply defined white band passing completely round the belly and including the fore-limbs. The hairs in this band are pure white to their bases apart from an isolated island of normally pigmented hairs in the mid-dorsal region extending rather more to the right than to the left of the mid-line. It is clearly a true partial albino or 'pied' shrew and it is interesting that, although animals with traces of white in various situations are not uncommon and complete albinos have



Pied Common Shrew

occasionally been recorded, such 'pied' animals appear to have been seldom recorded.

Bell (*History of British Quadrupeds*, 114, 1837) described an animal taken near Amesbury in Wiltshire 'having a broad white band over the loins, which extends all round the animal.' Rope (*Zoologist*, 220, 1883) described a specimen in which 'a white band encircles nearly the whole of the body at the loins, widest below and extending over about half the surface of the abdomen, where it takes an irregular form, however, being everywhere sharply defined.' This animal also possessed a silvery patch on one side of the head. The exact locality was not stated, but the author wrote from Blaxhall, Wickham Market. A rather similar animal was found in France by Héron Royer (*Bull. Soc. Zool.*, 134, 1883) who reported a Common Shrew obtained at Quincy, near Brunoy in which 'la partie dorsale est ornée d'une large selle d'un blanc pur, la tête et la portion postérieure conservent la coloration habituelle de l'espèce.'

It is interesting that all these recorded specimens should have exhibited a similar pattern. It seems that whereas in some species the variety of patterns in partial albinism is very great, in others the pattern produced is of a constantly recurring kind, such as that recently noted in the Carrion Crow (Harrison, *Bull. Brit. Orn. Club*, in the press, 1957) which produces individuals with a white wing bar in widely scattered localities.

I am most grateful to Mr. A. Hazelwood of the Bolton Museum who has kindly allowed me to study this specimen and also to Mr. Ernest Fielder of Sevenoaks who made the photographic plate.

FROM FIELD TO LABORATORY AND BACK

JOHN GRAINGER

Presidential Address to the Yorkshire Naturalists' Union, Barnsley,
December 8th, 1956

THE Yorkshire Naturalists' Union has been a valued background to my life and work for many years. I was, from the first, attracted by the ecological side of the Union's activities—that why and wherefore of plant and animal communities which is never far away from the mind of a field naturalist. This inspiration from the living plant in its natural setting—the first field of my title—was later coupled with the science of exact measurement in the laboratory by means of the university education in science which is now becoming common. A fortunate circumstance brought me back to another kind of field—the farmer's or gardener's—in which ecological inspiration and exact laboratory measurement are devoted to the practical task of increasing the inadequate food supply on this planet.

There is an urgency about this work, for though we in Britain obtain enough food as long as our industrial efforts are successful, the total food resources of the world are even now inadequate for the normal well-being of all the population. My own task is the elimination of a loss of crops by disease in west Scotland worth £2½ M. Just over a million pounds' worth is controllable, and slightly less than half that amount is actually controlled. Economic control methods have still to be found for the remaining £1½ M. worth of loss, but we have, over the last twelve years, taken almost half a million pounds' worth of loss from the uncontrollable to the controllable category. No apology seems to be needed for talking about such practical matters as these, and they are matched by similar losses in almost all parts of the world.

My interests have lain among the fungi, viruses and, more recently, the eel-worms which cause crop disease. Experimental fungus ecology has indeed been implicit in the work of the Mycological Committee of the Y.N.U. since the time when James Needham tried the edible qualities of a number of species on his wife. My first investigations were rather more humane—a study of the acidity relations of the larger fungi which grow on soil, and of factors which affect the time of their fructification.

The first project was carried out mostly at the Union's fungus forays over a period of years, the laboratory measurement being made by the B.D.H. portable soil-testing indicator outfit. It showed that whole genera favoured particular parts of the pH scale. Russulas and Lactarii like the more acid conditions; Coprinus the less acid, neutral or alkaline range, whilst Hygrophori have a fairly extensive range of pH. The common mushroom is most commonly found round neutral conditions, and the larger earth-inhabiting discomycetes like the soil to be neutral or slightly alkaline. Coprophilous fungi also have close relations with the pH of the medium on which they grow. The *Stropharia* spp. all favour acid dung, whilst *Anellaria separata* can only be found on the less acid product.

Tests of acidity can also be applied to wood, though less easily than to soil. New wood is acid, but some fungi, e.g. *Corticium laeve*, can grow on it. As wood decays, it becomes less acid and the fungus flora changes; the common candle-snuff fungus *Xylaria hypoxylon*, for example, is usually found on wood which has become neutral.

Most of the soil-inhabiting members of the larger fungi fructify on highly organic soil with a water-holding capacity at least double that of ordinary fertile agricultural soil. This finding and the acidity requirements of mushrooms have been taken back to the horticultural 'field', for certain failures of mushrooms have been traced to unsuitable pH values, and to inadequate amounts of water in the compost.

My wife's Chairman's Address to the Union's Mycological Committee in 1942 drew attention to the relatively large amounts of nitrogen needed for fungal growth. This led to an explanation of the autumnal maximum of fungi, for the month of September is typically the only month of the year in which a suitable temperature is coupled with sufficient rainfall and also adequate nitrogen in the soil. This was established as a co-operation between my sister, making the day-to-day observations on a field at Meltham Mills, Mr. A. Broadbent, who made the 'laboratory' measurements of weather, and I myself, making laboratory estimations of nitrate in the drainage water.

Variations of weather from 'typical' conditions over the last three years have made it possible to test the validity of this idea. The very wet summer of 1954 brought adequate rainfall and nitrogen in August, and the fungi grew in that month.

1955 was dry and it was not until late September and early October that there was sufficient rainfall; the fungi came then. The present year brought an extended crop of fungal fructifications, from July to September. There are several indications that, because of the phenomenally dry weather of the previous winter and spring, the spring maximum of soil nitrogen (which usually has but little effect on the fungi) was delayed until late June, when sufficient rainfall also occurred. The fungi began to appear in July, and as the rainfall and the nitrogen supply continued, so did the fungi.

It is, then, possible to explain various ecological factors of the larger saprophytic fungi; could the same kind of ecological information be obtained for the parasitic fungi which cause economic loss? Can we, in other words, disentangle some of the complex interacting factors of host and parasite which sometimes allow disease to appear, and sometimes prevent it? Work recently completed in my Department of Plant Pathology, Auchincruive, suggests that we can (Grainger, *Phytopathology*, **46**, 445, 1956). In the first place, two hosts investigated—oat and potato—are not uniformly 'susceptible' to their respective parasites *Helminthosporium avenae* (leaf spot) and *Phytophthora infestans* (blight) through the growth cycle. Both are able to contract severe disease in the early stages of growth; both have an intermediate healthy period, and both are later capable of receiving a second attack by the parasite. This changing physiological ability of the host plant to take disease has been called 'disease potential' to distinguish it from 'susceptibility' or 'resistance', which are characteristics of a species or variety. It has, moreover, been found possible to measure the disease potential by calculating the C_p/R_s ratio—the weight of total carbohydrate in the whole plant (C_p) divided by the residual dry weight of the shoot (R_s). This ratio is high when the disease potential is high, and *vice versa*. In both oat and potato, the C_p/R_s ratio is low during the healthy period, and high during disease phases, and the higher the ratio when disease appears, the quicker will be its development.

The pattern of ratio change appears to be fairly standard for most plants. How, then, do we take this ecologically inspired laboratory work back to the practical field? Much remains to be done, but it has already been found possible to grow healthy tomato plants on soil heavily infected by *P. parasitica* by preventing any rise in C_p/R_s ratio after transplanting. One of the ways in which this can be done is to avoid variations in temperature during the process. Then again, many glass-house tomato crops were found to have insufficient water for maximum growth. This would not only make the C_p/R_s ratio high by limiting growth, but make *Botrytis* stem rot severe, and also lower the yield. Giving sufficient water (almost 1 gall. per plant per day at maximum growth) reduced the disease to infinitesimal proportions, and raised the yield by an amount greater than the disease loss. We are thus beginning to specify that a healthy plant is one in which the C_p/R_s ratio is kept low for as long a time as possible.

Potato blight meets a physiological disability when the C_p/R_s ratio of its host is low during the month of June, and it must thereafter also have suitable weather before an attack can begin. Suitable weather conditions were defined by A. Beaumont (*Trans. Brit. Mycol. Soc.*, **31**, 45, 1947) as a minimum temperature not less than 50° F. and a minimum relative humidity (R.H.) not less than 75% for a continuous period of not less than 48 hours. The 'Auchincruive' self calculating blight forecast recorder (Grainger, *Nature*, **171**, 1,012, 1953; Weather, **10**, 213, 1955) specifies these particular conditions without any complex two-dimensional calculation and thus takes the ecological idea back to the practical field for the individual farmer if necessary. The calculator pen is set above the temperature pen when the 'wet-bulb' of the instrument is dry, so that when it is wet as in practice, the calculator pen (green) is above the temperature pen (red) if the R.H. is above 75%; green coincides with red when the R.H. is 75%, and green is below red when the R.H. is below 75%. This instrument therefore gives a forecast of the first appearance of potato blight (7-25 days later) when green is on or above red and both are on or above 50° F. for 48 hours or more on end. The grower can then spray his crops with protective fungicide (in areas where this practice is economic) at the time when it will give most control. Because of the above-mentioned physiological barrier in June, the 1st of July is taken as the 'zero time' for blight forecasting, since it is only after that time that the potato plant begins to be able to take the (secondary) disease epidemic. The C_p/R_s ratio also enables the rate of blight development to be forecast, for it will be rapid if the ratio is high when blight appears, and *vice versa*.

Another instance where ecological conditions involving weather lead to diminished losses from disease is to be found in the early potato crop of the Ayrshire coast. The variety *Epicure* is used entirely for this purpose, but the special frost-free sites along the seaboard are now almost entirely infested with potato root eelworm (*Heterodera rostochiensis*). This organism causes 80 to 100% loss when maincrop varieties are planted on infested ground inland, but the first early *Epicures* suffer only 30 to 40% loss. They are planted in February, before the soil temperature reaches 45° F. and the eelworms become active (in early April). The early crop has initially about six weeks' eelworm-free growth and there is measurable tuber formation by the time the eelworm appears. By the time there is a marketable crop of tubers, the eelworm has not completed its life cycle, and the eelworm cysts are immature. Soil infestations are therefore correspondingly low. Maincrop potatoes, on the other hand, are planted after the soil temperature has risen above 45° F.; they have no eelworm-free growth, receive the full devastation of the parasite, and have high soil infestations.

The amount of eelworm-infested land in Britain, and, indeed, in western Europe, is spreading inexorably, and it is necessary to visualise a time when it will not be possible to grow sufficient potatoes. A recent survey in Lanarkshire in collaboration with Captain J. Ross shows, however, that it would then be possible to get reasonable crops of *Epicure* potatoes on eelworm-infested ground by growing them on certain frost-free upland sites. They can be planted later (April) than the Ayrshire *Epicures*, and escape the full effects of the eelworm attack by having just such a period of initial eelworm-free growth because of low soil temperatures as have the Ayrshire *Epicures*. The growth cycle would, however, be later on the uplands, and the potatoes would be harvested about the time of normal maincrops. An ecological investigation has removed the black prospect of having to do without the crop.

It is now possible to control eelworm disease by direct methods, though the economics of the process are not yet universally enticing. The substance D.D. (dichloropropane-dichloropropylene mixture) brought relatively little control in southern Britain, but gave better results in south-west Scotland. An investigation into the ecology of its control action suggested that (1) the material could kill eelworm larvae when its concentration was relatively high, (2) at lower concentrations it caused some action equivalent to the hatching of the eelworm eggs in the absence of potatoes, and (3) it could stimulate the growth of a potato crop directly. The fullest use of all these three types of action brought economic success in control of the eelworm on the high value first early *Epicure* crops mentioned above. Treatment is given immediately after one crop is lifted, in order to benefit next year's crop (they are grown without rotation). This gives time for the D.D. to exert its maximum effect from the first and second types of action, and D.D. is sufficiently persistent in the cool Scottish soils to be able to bring some direct crop-stimulating action along the third line mentioned above. The 'Auchincruive' soil injector takes the idea back to the field in practice.

Soil injection usually places continuous lines of a volatile material (such as D.D.) from four to six inches deep in the soil, the volatility being responsible for the spread of vapour to all parts. An important ecological indication was obtained in this work, namely that placing the volatile material in spots gave superior control to placing it in continuous traces. This idea goes back to the practical field as the 'Auchincruive' heart-throb flow interrupter or the 'Auchincruive' metering pump.

Volatile materials are, however, relatively expensive; D.D. costs £15 per acre and is only economic on the high-value first-early crops. Another way of controlling soil-borne disease is to mix non-volatile materials intimately with the soil. Many inorganic compounds of mercury will control eelworm and fungal diseases in the soil, and the materials would cost only about a quarter the price of D.D. per acre. There was, however, no field-scale machine for applying them to the soil. By using radioactive iodine (I^{131}) instead of the mercury compounds (Grainger, *Nematologica*, **1**, 31, 1956), purely to estimate the type of distribution, it was found that intimate mixing could be defined as that which gave a distribution within $\pm 20\%$ of the desired value in all parts of the soil mass. Similar radioactive assessments suggested the lines of a suitable field-scale machine which has now been built and tried experimentally. It gave 75% of control of potato root eelworm, using a special fine-particle dust containing yellow oxide of mercury, and the yield of potatoes was doubled on the small experimental plots. Mercury compounds have been shown to give economic control of the surface-feeding eelworm *Ditylenchus dipsaci* causing tulip root of oats. Mercuric chloride solution, 0.1% is sprayed on the surface at

50 gall. per acre and mixed into the top layer by means of the 'Auchincruive' surface mixer.

The type of control achieved by mercury compounds in soil is another example of applied ecological thought, coming this time from Dr. J. R. Booer (*Ann. appl. Biol.*, **38**, 334, 1951), who found that all mercury compounds applied to soil were quickly reduced to metallic mercury. This elemental form has no fungicidal or nematocidal action, but mercury vapour affects the rate of growth of many organisms. Booer reconciled this difficulty with the known ability of mercury compounds to control soil-borne fungi by assuming that mercury vapour retarded the activity of the parasite more than it did that of the crop, thus disturbing the relationships for disease to occur. My own investigations on eelworm control suggest that mercury compounds act in an exactly similar way against these parasites. A fight can be stopped either by killing one of the participants, or by separating the combatants. Conventional fungicides or nematocides aim to kill the parasite; mercury compounds separate the combatants, putting the activities of host and parasite 'out of step', but control the disease no less surely. They also have the advantage, the ecological advantage, that, as no control of disease is obtained in the absence of a host plant, none of the beneficial elements of the soil flora or fauna are killed along with the disease parasite, as frequently happens with conventional fungicides.

The control of virus diseases is largely by 'roguing'—the removal and destruction of diseased plants, coupled with methods to destroy transmitting insects, and growth in relative isolation. The method is rough but effective, and, under the aegis of my Department, several stocks of dahlias in west Scotland are maintained with less than 1% of virus disease, where unrogued stocks have 25 to 70%.

The ecological discipline of thought has, then, led us to new types of disease control in practice—the avoidance of disease-prone growth in plants, the wastage of a parasite in the absence of a susceptible host, the control of disease by putting host and parasite 'out of step', the arrangement of a parasite-free period of growth for the host, and the prediction of disease appearance in order to give precision to existing methods of control. These are formidable new items in our armoury against the economic losses mentioned above.

The Yorkshire Naturalists' Union began its long and useful life of field study mainly on taxonomic lines, and ecology was a later growth. These two divisions are mutually complementary, but I believe that taxonomy of the future will lead inevitably to a more ecological grouping than at present. Perhaps our future energies will be turned from the supremely difficult task of naming a species as an exact unit, to the relatively easier but more generally useful alternative of assigning it to an ecological group.

Knowledge within the Yorkshire Naturalists' Union is always sought and never forced; its education has a happy efficiency which remains unimpaired among many modern distractions. I have received from the Union early guidance, fellowship in study and present stimulus of thought so now I render thanks to its members, express my appreciation of the honour of your Presidency, and pay my tribute to so great a Union.

Plant Pathology, by John Charles Walker. 2nd edition. Pp. xii + 707 with 194 text-figures. McGraw-Hill, 1957. 75/-.

Nearly all the better known diseases of plants are characterised in this book. For each one the symptoms of the disease and its cycle, the causal organism and its life-history and appropriate control measures are described. The greater part, approximately half the book, deals with fungus diseases, but bacterial and virus diseases, nematode and phanerogamic parasites, deficiency diseases and other nutritional disorders are all covered. Fungicides and protective measures generally are dealt with in three chapters covering disease control and there are chapters on host-parasite relations and the history of plant pathology. For students of agricultural botany in general and plant pathology in particular, this comprehensive survey of the subject is a most useful reference book. The valuable list of research papers which follows the account of each disease has been brought up-to-date by the inclusion of papers published up to 1955.

W.A.S.

The Naturalist

NOTES ON DESMIDS OF THE GENUS *STAURASTRUM*I. *STAURASTRUM PSEUDOPELAGICUM*, *S. SUBCRUCIATUM*, *S. AVICULA* AND *S. DENTICULATUM*

A. J. BROOK

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Staurastrum pseudopelagicum W. & G. S. West in J. Linn. Soc. Bot., **35**, 547, Pl. 18, figs. 1-3, 1903. (Figs. 1-7.)

In commenting on the forms of this desmid occurring in the Wisconsin lakes, Smith (1924, p. 83) states that these have a less stout body than those in the original illustrations of this species from British material, made by the Wests (West and Carter, 1923, Pl. 145, figs. 11-12). Most, if not all of the figures of this desmid published since 1924 seem to have been of stout bodied forms (Skuja 1949, Irénée-Marie 1952, Thomasson 1952, Brook 1955), a fact which rather suggests that the Wisconsin forms are atypical, though Smith (*loc. cit.*) does state that the more delicate forms he has figured also occur in collections which he has examined from Loch Morar, Scotland. My own observations on this desmid, which is widely distributed but never seems to be abundant in the plankton of oligo- and mesotrophic lakes throughout the British Isles, have indicated that the semicells and their processes may vary considerably in shape and robustness. At one extreme there are the very tumid forms with short, stout processes such as occur in Loch Shurrery, Caithness (Fig. 1), intermediate types with more elongated and delicate processes from Loch Katrine and Loch Tay (Figs. 2-3), and the more flattened, slender forms, similar to Smith's figures, which occur at times in Windermere (Fig. 4).

Several investigators have commented on the variability in the number of the stout diverging spines with which the processes of this *Staurastrum* are tipped. Most frequently there are two, lying vertically one above the other (see West and Carter, p. 107), though Smith's American plants have three as the most frequent number. Less commonly specimens with the processes in one semicell bearing two spines, and in the other three may occur (Brook 1955, also Fig. 1). Recently I have seen a number of specimens from Windermere in which one or more, and sometimes all of the processes are tipped with only one spine (Fig. 5). It will be seen that the unusual form figured here from Loch Achray bears four spines on several of its processes (Fig. 6).

The ornamentation of the semicells is also a character subject to considerable variation, though basically it consists of rings of small granules arranged in concentric series round the processes, continuing onto the semicell body. These granulations may be very distinct, irregular or almost invisible. On the apex and sides of the body the granules tend to be much less prominent than on the processes and apparently less regular in their disposition, this apparent irregularity probably being due to their uneven development. On the apex of each semicell, it is possible to distinguish three pairs of granules, more prominent than the rest (Fig. 1, vertical view), near the point of origin of each process. Very frequently, some (Fig. 7) or all of these granules may be so enlarged that they constitute spines of considerable length (Figs. 3, 4 and 6). Thomasson (1952, p. 236, fig. 6) has described a variety of *S. pseudopelagicum* which he has named var. *spinosa*, largely on account of the delicate spines which he found occurring on the semicell apices in the position described above. Smith's var. *tumidum* of this species (Smith 1924, p. 84, Pl. 72, figs. 8-11) bears similar, though less well developed apical spines. Thomasson states that his variety differs from the latter in its better developed spines, shorter processes and more compact shape of the semicells. Since, however, all of these characters seem very variable and one can find all combinations of body shape, process length and development of apical spines (indeed Thomasson's desmid seems to be more tumid than Smith's var. *tumidum*, especially in the greater curvature of the cell apex), it seems doubtful whether these two varieties can reasonably be maintained. It is suggested that it would be better to reduce them to the status of forms, though even if this is done one is still faced with the problem of putting a name to distinctly slender forms with apical spines, or decidedly tumid forms without them.

Smith (*loc. cit.*) states that *S. pseudopelagicum* should be compared with *S. lacustre* G. M. Smith, and some of the British specimens of the former species seem to show an even greater similarity with the latter species than do Smith's Wisconsin plants. In Figs. 2 and 6, the processes are very slender and considerably elongated and their

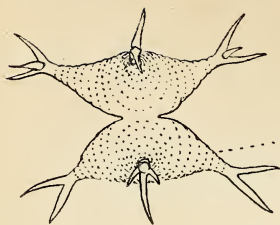


FIG. 1

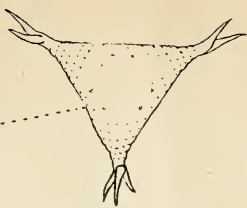


FIG. 2

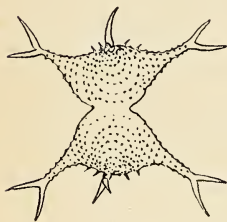
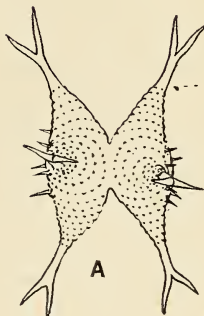
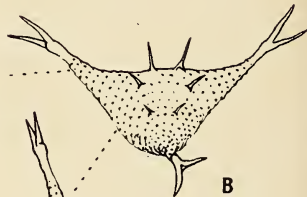


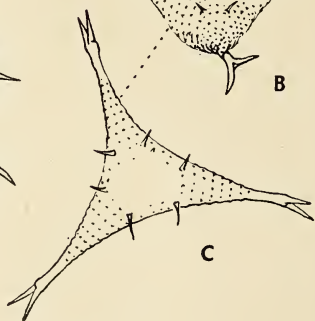
FIG. 3



A



B



C

FIG. 4

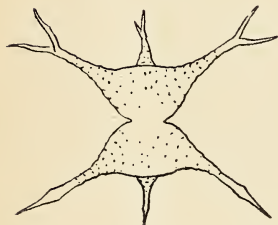


FIG. 5



FIG. 7



FIG. 6

FIGS. 1-7. *Staurastrum pseudopelagicum* W. and G. S. West. $\times 500$

granular ornamentation much reduced (see also Fig. 7), while the apical ornamentation differs only in that *S. pseudopelagicum* bears spines and *S. lacustre* verrucae. With reference to this latter character, it is now generally recognised that granules, spines and verrucae represent different degrees in the development of the same ornament, a fact which is emphasised by Irénée-Marie's drawing of the vertical view of *S. lacustre* from Canadian material (Irénée-Marie 1939, Pl. 59, fig. 2) in which spines do in fact occur on the apex. The major difference in these two species would thus seem to be in the restriction of the ornamenting granules to the processes in *S. lacustre*, and in the shape of the semicell body which is more robust and tumid in *S. pseudopelagicum*. However, even these characters tend to converge in the two species (compare especially Smith 1922, Pl. 12, figs. 13-15, and West and Carter 1923, Pl. 145, fig. 11).

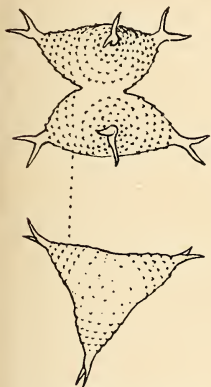


FIG. 8. *S. subcruciatum*
Cooke and Wills $\times 500$

S. subcruciatum Cooke and Wills in Brit. Desm., 148, Pl. 51, fig. 3, 1887. (Fig. 8.)

There is no suggestion in West and Carter's monograph on the genus *Stauroastrum* (West and Carter 1923) of any affinity between *S. subcruciatum* and *S. pseudopelagicum*, though an affinity seems to be implied between the former species and *S. avicula* Bréb. through the var. *subarcuatum* West, from which it is stated to be distinguished by 'its finer granulation and by the fact that the angles of the semicell are produced to form distinct cylindrical processes.' The specimen of this desmid from Lochan Daimh Mhor, Sutherland, figured here (Fig. 8), and those in West and Carter (Pl. 133, Figs. 6-7) do, however, clearly suggest a relationship with *S. pseudopelagicum*. Indeed, *S. subcruciatum* may perhaps be regarded as a robust (benthic?)

form of the latter species with much reduced processes, for the shape and dimensions of the semicell body, the ornamentation, and the stout, divergent forked spines with which the processes are tipped, are characters common to both.

S. avicula Bréb. in Ralfs Brit. Desm., 140, Pl. 23, fig. 11, 1848, forma (Fig. 9.)

A hitherto undescribed form of *S. avicula* differing most radically from type in possessing six delicate spines on the apex of each semicell which are identical in appearance and their disposition with those occurring in *S. pseudopelagicum* has been found on rare occasions in the plankton of Ennerdale Water. These plants are, however, very similar to the desmid named *S. avicula* var. *tyrolense* Schmidle by Irénée-Marie (1939, Pl. 55, fig. 5), though differing in that the apical ornament is shown as verrucae. Also similar is the *Stauroastrum* which Huber-Pestalozzi (1928, Taf. 13, fig. 11) has described from Corsica and named var. *granulato-furcigerum* of *S. forficulatum* Lund. This desmid seems to bear only the most superficial resemblance to the latter species and it is suggested that it is probably much more closely related to this Ennerdale desmid. *S. arcuatum* var. *guitanense* West would seem to be another closely related form.

With regard to the shape of the semicells, this Ennerdale form of *S. avicula* comes nearer to the var. *subarcuatum* than to the species itself. The cell wall, as in the type, is covered with minute granules arranged in concentric series round the angles and progressively reduced in prominence centripetally, while the tips of the stout angles are furnished with two spines, much more robust than in the type, placed vertically one above the other.

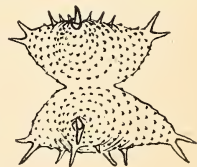


FIG. 9.
S. avicula Bréb. forma
 $\times 500$

S. denticulatum (Naeg.) Arch. in Pritch. Inf., 738, 1861. (Figs. 10-12.)

In the restriction of the concentric rings of granules to the angles of the semicells, none being present in the central region, this species would seem to bear a similar relationship to *S. avicula* as *S. lacustre* does to *S. pseudopelagicum* (see above). Some unusual forms of this desmid, which does not appear to have been previously recorded from Scotland, have been found from time to time in the plankton of

Loch Mhullaich, Sutherland. Of these, the most remarkable were those in which one semicell was more or less typical while in the other, the angles were rounded and considerably reduced and devoid of granular ornamentation and the paired spines normally tipping them (Fig. 10 A-C). In general appearance these aberrant semicells bear a strong resemblance to those of *S. subpygmaeum* West, though they are somewhat smaller. Intermediate forms between this condition and the normal have also been observed and should be compared with *S. trachytithophorum* W. and G. S. West. The semicells in these specimens (Fig. 11) are more broadly triangular in vertical

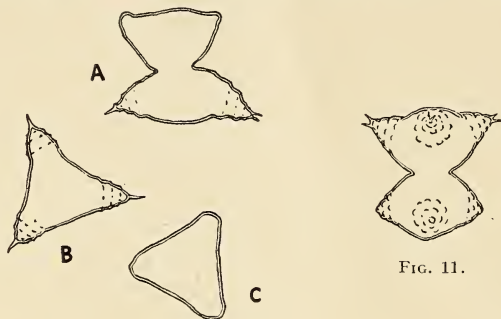


FIG. 10.

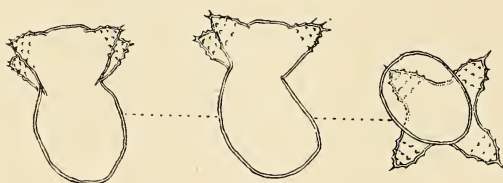


FIG. 11

FIGS. 10-12. *S. denticulatum* (Naeg.) Arch. $\times 500$

view than in the typical form and the paired spines which usually tip them are again absent, though the granular rings round the angles are still apparent.

Even more aberrant than the above forms are the occasional specimens, some triradiate and a few quadriradiate (Fig. 12), in which one semicell has the form of an asymmetrical and elongate sac, bearing no resemblance at all to the adjoining, normal semicell.

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SOME CRANEFLIES (DIPT: TIPULIDAE) OF A LANCASHIRE CLOUGH, INCLUDING SEVERAL NEW COUNTY RECORDS

L. N. KIDD

THE small valley known as Holden Clough lies between Oldham and Ashton-under-Lyne. One end joins the main Oldham to Ashton road near Bardsley Bridge, and from here the clough stretches for a distance of approximately one mile to a point where it joins the Lees New Road. At about a quarter of a mile from its Bardsley end the clough is crossed by a railway track which formerly belonged to the Oldham, Ashton, and Guide Bridge Railway Co. The embankment which carries this railway virtually divides the clough into two unequal parts. It is from an area beyond this embankment, and stretching for a distance of rather under half a mile, that most of the following species of craneflies were taken. A stream traverses the clough where it runs through a culvert beneath the railway, after emerging from which it continues some distance further before joining the River Medlock.

The clough is covered with glacial drift, mainly boulder clay, but deposits of a sandy nature can be seen in places. The area under consideration is scantily wooded with oak, both *Quercus robur* L. and *Q. petraea* (Mattuschka) Liebl. being present, sycamore, alder, and an occasional beech. Shrubs present include hazel, guelder rose, hawthorn (*Crataegus monogyna* Jacq.) and several *Salix* spp. Much erosion has taken place in recent years and this is likely to continue with an ever decreasing number of trees and shrubs to bind the banks. A fairly large mass of butterbur occurs on the railway embankment and on the sides of the nearby stream. This has proved a most productive area, the large leaves of this latter plant offering a welcome canopy to flies of many species. Areas of bracken and *Polygonum bistorta* L. occur and there are numerous marshy places where plants such as *Caltha palustris* L., *Viola palustris* L., *Lychnis flos-cuculi* L., *Filipendula ulmaria* (L.) Maxim., *Eupatorium cannabinum* L., *Angelica sylvestris* L., *Galium palustre* L. and *Orchis fuchsii* Druce occur.

In a previous paper (Kidd, 1953) I recorded finding some 42 species of Tipulidae in Holden Clough. Since then a further 15 species have been taken there, and these are mentioned below together with further notes on one or two species previously recorded from the clough.

The attractive cranefly *Tipula* (*Acutipula*) *maxima* Poda and *T.* (*Vestiplex*) *scripta* Mg. have been taken during the months June and July. Two *Nephrotoma* species have been added to the list, the very common *N. flavipalpis* (Mg.) and *N. quadriaria* (Mg.), both being taken in July. The larvae of the latter, which is common and generally distributed in Britain, have been recorded in soil by Mr. A. Brindle and Mr. J. R. Chiswell, whilst Mr. R. L. Coe recorded a pupa in old cow-dung. Further specimens of the uncommon *N. analis* (Schum.) have been taken, the dates of capture ranging from June 7th to July 31st over a period of three seasons' collecting. When recording this species for Holden Clough in my 1953 paper I mentioned that the wing-tip was only slightly darkened. It would appear that the specimen under consideration at the time was newly-emerged and that the wing markings had not developed fully. The subsequent captures are more in agreement with the key in the 'Handbook'. The larvae, according to Chiswell, live in fairly moist soil.

A male of *Limonia* (*Limonia*) *dilutior* (Edw.) was taken on August 1st, 1953. This species has been stated to occur among broom, although it would appear not to be confined to areas where this plant is growing. A solitary female of *L.* (*Dicranomyia*) *morio* (F.) was taken on the same day and the species is probably not uncommon in the area.

Pedicia (*Crunobia*) *straminea* (Mg.) which appears to be rather a local species, has been taken during September, and the more local or rare species *Dicranota* (*Dicranota*) *guerini* Zett. has been taken in July, August, and as late as October 27th. This is the only Lancashire locality on record and the specimens show the abnormalities in venation pointed out by Edwards (1938) and Coe (1950), cell M_1 being present in some cases and absent in others. These flies were on one occasion taken resting on a vertical concrete face just outside the culvert mentioned earlier. Cuthbertson has recorded the larvae as inhabiting sand and gravel in mid-stream. The species *D.* (*D.*) *bimaculata* (Schum.) recorded for the clough in my previous paper, appears to be a not uncommon cranefly, having been recorded for the months April, May and August. The carnivorous larvae are stated by Crisp and Lloyd to feed chiefly on oligochaetes, but also to take some insect food.

Cheilotrichia (Gonempeda) flava (Schum.) is probably common in the clough, and is on the wing during June and July. *Erioptera (Erioptera) divisa* (Walker) captured on June 27th, 1953, is the first record for Lancashire, although the species is stated to be frequent and generally distributed in Britain. *E. (E.) diuturna* (Walker) is another apparently overlooked species, the Holden Clough specimen being only the third record for Lancashire. It is rather late in appearance, all the Lancashire captures having been made in mid-September. A further two males of the apparently rare *E. (Psiloconopa) melampodia* (Lw.) were taken on June 6th, 1953, the clough being the only Lancashire locality on record for this species, and on this same date I was delighted to obtain a male of *Ormosia (Scleroprocta) sororcula* (Zett.), a cranefly only hitherto recorded from Derbyshire and Flintshire. Finally, three species of *Molophilus* have been added to the list. *M. niger* Goet. was taken on May 10th, 1953, this being the second Lancashire record of a species stated to be locally common by Mr. Coe. *M. curvatus* Tonn. taken in June 1952 is also the second Lancashire record, the previous capture being a specimen taken at Clayton-le-Dale by the late Mr. Harry Britten in 1924. This cranefly is stated to be uncommon by Mr. Coe, although Crisp and Lloyd state that they found the larvae to be abundant in woodland mud. Specimens of *M. ochrescens* Edw. were taken on July 20th, 1952, and July 31st, 1954. Mr. Coe gives the dates June, and August to September, stating that the species is uncommon, Argyll southwards to Suffolk. There are no previous records of this species for either Lancashire or Cheshire.

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Vol. IV. Part I. Coleoptera. Introduction and Keys to Families by R. A. Crowson. Pp. 59, 118 ff. Price 10/-.

Vol. V. Part II. Coleoptera, Scarabaeoidea by E. B. Britton. Pp. 29, 68 ff. Price 7/6.

Vol. VI. Part I. Hymenoptera. Introduction and Keys to Families by O. W. Richards. Pp. 94, 218 ff. Price £1.

A further three parts of the Royal Entomological Society's popular and valuable 'Handbooks' were published on December 31st, 1956, each containing, for the first time, a number of admirable figures of whole insects by professional artists, an innovation adding greatly to the value of these synopses.

Crowson's keys to the families of Coleoptera closely follow his important series of papers in the *Ent. mon. Mag.* on the classification of the whole order, recently (1955) reissued in book form. This is a very sound and competent classification and its acceptance by the Society for their 'Handbooks' will go far towards establishing it in the tardy minds of British coleopterists. The concluding pages of this part are devoted to a helpful 'Conspectus' of the classification showing the equivalent groupings used in the works of Fowler, Reitter, Imms, Joy, van Emden, and Kloet and Hincks.

Professor Richard's Introduction and Keys to the Hymenoptera has long been needed and its publication may well attract more students to this most neglected of all orders.

Glad indeed though the reviewer is to welcome these valuable synopses, he cannot help wondering if their technical nature may not mitigate against the original intention of supplying entomologists with simple keys for the identification of British insects. Or is that too complex a problem to approach simply in any case?

W.D.H.

THE DRAINING OF BROTHERTON INGS DURING 1956 AND ITS EFFECT ON THE SPECIES OF BIRDS BREEDING THERE

K. SENIOR

PUMPING operations for the draining of Brotherton Ings by the Central Electricity Authority began early in the 1956 breeding season, with disastrous results to birds nesting there. The following brief account of some of the effects will contain many gaps which could be filled by observations of other watchers.

It is difficult to quote exact figures of breeding records in previous years for comparison, since Brotherton Ings has usually been included, for the purpose of reports, with the adjacent Fairburn Flash. Although there has always been much movement between the two areas, certain species showed a marked preference for Brotherton as a breeding site. These included Great Crested Grebes and colonies of Black-headed Gulls and Reed-Warblers. In 1955, the colony of Reed-Warblers numbered 15 pairs and on June 19th, 1955, there were in the Fairburn/Brotherton area 86 Great Crested Grebes, including 37 juveniles, the majority of which were on Brotherton Ings. Other species which bred regularly at Brotherton were Little Grebe, Pochard, Mallard, Tufted Duck, Shoveler, Moorhen, Coot, Mute Swan, Sedge-Warbler and Reed-Bunting.

The build-up of breeding species at Brotherton Ings in 1956 commenced early in March. On March 11th, 14 Great Crested Grebes were already back in the area as were also about 300 Black-headed Gulls and 20 Pochard. From this date there was a steady increase of Great Crested Grebes until, by April 29th, 44 were present. At this time several could be seen sitting on their nests, two of which were in reeds only a few yards from the bank. At least 11 nests with eggs had been located. By April 29th, too, the Black-headed Gull colony was already a hive of activity; nest building was in progress and many birds were sitting. Other water-birds with nests in the area were Little Grebe, Mallard, Pochard, Mute Swan (two pairs), Coot and innumerable Moorhen.

Pumping commenced in early May. A count of occupied nests at this time showed that there were: Black-headed Gull, 160; Coot, 75 to 80; Great Crested Grebe, 19; Little Grebe, 21; Pochard, 3 (with 7, 9 and 5 eggs); Tufted Duck, 2 (with 11 and 7 eggs); Mallard, 3 (with 10, 3 and 7 eggs); and Mute Swan, 2. Obviously many additional nests were not discovered and the numerous Moorhen nests were not counted. These figures alone prove just how important a breeding area Brotherton was.

A notable feature of 1956 was the presence of Black-necked Grebes throughout the breeding season. Three were present on April 29th and up to five were subsequently observed on several occasions. It is only the third occasion on which breeding is known to have been attempted in the county.

By May 29th the water level had dropped several inches and the reed-beds on the verge of the Ings were almost clear of the water. Several Coot and Moorhen nests in these areas were found deserted. Those of Coots alone contained at least 100 eggs. Some had been upset by the falling water level and other species were being similarly affected. On this date the first juvenile Great Crested Grebes were seen, three in number, being carried on the back of a parent bird.

The water level continued to fall at an alarming rate and by June 3rd it was down by between 12 and 18 inches. Areas of mud were becoming exposed, reed-beds were drying out and many of the birds were now exposed to the new menace of disturbance by humans and dogs. Unfortunately, the shallowest area contained the largest concentration of gulls' and grebes' nests and was the part favoured by the Black-necked Grebes. It was soon easily accessible and the position in this part of the Ings became quite chaotic. Of an estimated possible total hatch of about 300 Black-headed Gulls, not more than 30 or 40 appear to have survived. Many deserted nests and dead juveniles were observed. Of Great Crested Grebe nests, seven containing eggs had been deserted as had also twelve Little Grebe nests.

On June 9th, several broods of Coot were observed. A pair of Great Crested Grebes had two juveniles and another pair were carrying young. Two pairs of Little Grebes had three and two juveniles and a Pochard with two ducklings was seen. Four male Shoveler were presumed to be the mates of females sitting on eggs. A pair of Mute Swans were persevering with the incubation of six eggs despite the fact that the nest was now quite out of the water and easily reached. In the one bed of *Phragmites* no fewer than ten Reed-Warblers were in song.

By June 17th, with the water level falling rapidly, the Black-headed Gull colony was clear of the water. Only ten juvenile Black-headed Gulls were seen on the water. One hundred and sixty nests which were examined contained 252 eggs and 14 juveniles; 77 of the nests contained 1 egg, 55 contained 2 eggs and 22 contained 3 eggs. The low average of eggs per nest, together with the small number of young, possibly represented a high proportion of second attempts. Several nests had certainly been newly constructed. Of several Coot nests examined, only three now contained eggs (1, 1 and 3). Great Crested Grebe nests with eggs (1, 1 and 3) also now numbered only three. On the water were twelve juvenile Great Crested Grebes in family parties of 1, 2, 2, 3 and 4.

Two days later the first pair of Mute Swans successfully hatched out six cygnets. Two pairs of Little Grebes with two and three juveniles were observed and a Mallard family party contained nine very small young.

By June 25th the brood of Mute Swans had been reduced to five. There was a more pronounced fall in the water level and the only remaining deep water was in a narrow channel approximately two-thirds the length of the Ings. It was now easier to keep the remaining water-birds under observation, as the channel was open and offered virtually no cover—a fact which undoubtedly contributed heavily to the losses among young birds remaining on this stretch of water. Of 17 Little Grebes observed, seven were juveniles and there were 53 Great Crested Grebes including 21 juveniles, at least three of which had been deserted. Five small Pochard were seen on this day attempting to clean themselves of weeds and mud. Only two Black-necked Grebes now remained in the area. In the *Phragmites*, the fact that 12 Reed-Warblers were still in full song indicated a disturbance to their normal breeding routine.

On June 29th, four out of 30 juvenile Great Crested Grebes were flopping helplessly in the mud, unfortunately quite out of reach. Broods of seven and three young Pochard were observed as were 12 juvenile Little Grebes. Several fledgling Black-headed Gulls and Coot were paddling about in the oozy mud whilst at another point on the mud was a tight pack of about 300 Coot, adults and juveniles.

By July 1st, the numbers of juvenile Great Crested Grebes had fallen to 19, of which three were isolated in a shallow pool. One was dead on the mud. A Mallard was seen with juveniles and the nest of a Tufted Duck contained seven eggs.

On July 4th, two more juvenile Great Crested Grebes—one of them in very poor condition—were isolated in a pool. The following day a juvenile Little Grebe and a juvenile Great Crested Grebe were caught and released on the adjacent Fairburn Ings. A further four juvenile Great Crested Grebes were later caught and released on Fairburn, on both occasions by R.S.P.C.A. staff. On the other hand, 11 juvenile Great Crested Grebes were found dead as also were a number of Little Grebes.

The food supply available to the grebes was obviously diminishing rapidly, even allowing for the fact that much of the remaining aquatic life was concentrated into a smaller area. Plant food for Pochard, Coot and Mute Swans must have been even more acutely scarce. Many adult Great Crested Grebes, unable to support themselves and their young, moved to other waters. Owing to the long fledging period, most of the deserted young either died of starvation or were killed by predators.

Another brood of Mute Swans (3) had hatched out by July 8th. Both family parties were on the remaining stretch of deep water and the cobs were fighting viciously for the small area available as territory. The pair with five young eventually returned to the small patch of marsh where they had nested and remained there until autumn, their diet augmented by scraps brought to them by villagers and other people who visited the area. The remaining Great Crested Grebe population was now down to only 8 adults and 12 juveniles. About 150 Coot in the area were almost all adults. A family party of seven young Pochard were certainly not the same ones seen earlier in the season. About 12 Reed-Warblers were still in song and a nest contained two fresh eggs. By July 17th, only a single adult Great Crested Grebe remained and juveniles were reduced to eight, of which four were very small. Their chances of survival appeared very slight. A juvenile Little Grebe, and family parties of two and three Pochard were still in the area. Lack of suitable water on Brotherton Ings had driven one Pochard with two young to the Aire whose high banks prevented escape from the heavy traffic on the river. They were diving constantly as each barge passed, and showed obvious distress.

On August 6th, a party of eight juvenile Mallard was seen in the reeds. By August 21st, juvenile Great Crested Grebes were down to two, and of nine Little

Grebes observed, four juveniles were still in down plumage. The last young Great Crested Grebe seen was a solitary bird on the 28th. It had gone by September 1st, when only the two family parties of Mute Swans and a few Coot remained.

By November the area was almost completely drained and deep channels were being cut. Only a few waders and Teal were feeding on the desolate stretch of mud that had been Brotherton Ings.

Looking back on the overall effect which the draining of Brotherton Ings had on the breeding population of the area, there can be no doubt that diving ducks and grebes—in particular Great Crested Grebes—suffered heavy losses. Species better able to adapt themselves to the changing conditions, Black-headed Gulls, Mallard, Coot, Mute Swans and Moorhens, though less affected, still suffered heavy losses. That young birds were forced into a limited area of receding water without cover meant that they became easy prey to predators such as the larger gulls, nor could they escape from pike which were undoubtedly responsible for the death of many young birds. Dried-out areas enabled humans to reach nests with eggs, and dogs to get among newly-hatched young. The number of young birds lost represents a disaster by any standards.

Praiseworthy as attempted rescue operations were, they were not very productive owing to the difficulties encountered. Deep hidden channels prevented easy movement, and the risk of driving unfledged birds into deep oozy mud had a hampering effect. It is to be regretted that Brotherton Ings had to be destroyed as a haunt of water-birds. That drainage was undertaken in the middle of the breeding season was inexcusable.

FAIRBURN INGS NATURE RESERVE

MEMBERS of the Yorkshire Naturalists' Union will have been pleased to learn that as a result of our representations, the West Riding County Council and the National Coal Board have concluded an agreement declaring Fairburn Ings a Nature Reserve under the National Parks and Access to the Countryside Act (1949). The N.C.B., owners of the land, will continue tipping colliery-slag on part of the area which, although now known officially as Fairburn Ings Nature Reserve, includes also Newton Ings and part of Ledson Ings.

The chief interest of the area to naturalists is its varied and abundant bird-life and I have been asked, as Hon. Secretary of the Ornithological Division, to act as temporary chief warden. There will be a number of other voluntary wardens and it will assist us if members of the Union and of affiliated societies will remember that the main object of making the area a reserve is not to provide facilities for bird-watchers and other naturalists but to preserve the wild-life.

I shall be glad if members who apply for permits to enter the reserve will:

- (a) refrain from looking for nests, especially those of rarer species;
- (b) refrain from trampling about in reed-beds and marshy areas: most of the birds can be seen from the road and footpaths with the aid of binoculars;
- (c) assist by reporting *immediately* (to me or to the County Police at Pontefract) any interference with birds, their nests or eggs;
- (d) keep accurate records of interesting observations on birds in the area and report such to me or to the Editor of the Yorkshire Ornithological Report;
- (e) not erect hides;
- (f) guard against danger of fire;
- (g) leave no litter;
- (h) not take dogs on to the area of the reserve;
- (i) co-operate in reducing disturbance to wild-life in the area and assist in any way they can to help achieve the purpose of the Reserve.

It will be helpful if members, other than those who visit Fairburn regularly, will apply for permits for specific visits rather than for general permits covering a whole year. In any case, permits must be renewed annually. Permits can be obtained from me at 8 Marlborough Gardens, Leeds 2, and applications should always be accompanied by a stamped addressed envelope.

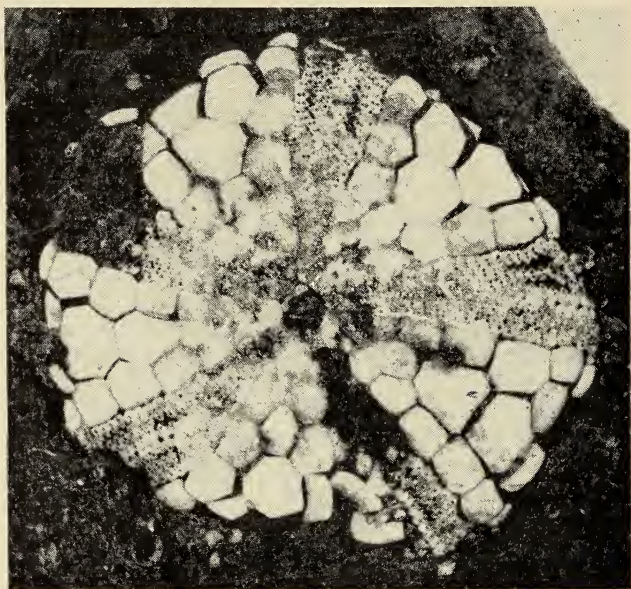
R. F. DICKENS,

Hon. Secretary, Ornithological Division.

A RARE FOSSIL ECHINOID FROM HAW BANK QUARRY, SKIPTON

W. H. C. RAMSBOTTOM

EARLY in 1956 a rare fossil echinoid was found in the western end of Haw Bank Quarry, Skipton, by Mr. S. Illingworth of the Craven Naturalist and Scientific Association. The horizon is near the base of the exposed Carboniferous Limestone Series in the Haw Bank Limestone described by Hudson and Mitchell (The Carboniferous Geology of the Skipton Anticline. *Summ. Progr. Geol. Surv.* for 1935, pt. ii, pp. 1-45, 1937). The specimen, which is shown in the photograph, has been identified as *Perischocidaris hartiana* (Baily) described by Jackson (Phylogeny of the Echini, with a revision of Palaeozoic Species. *Mem. Boston Soc. Nat. Hist.*, 7, pp. 1-490, pls. 1-76,

Rare Fossil Echinoid $\times 1\frac{1}{2}$

1912). This is the only known species of the genus, which has hitherto been known only from two imperfect moulds from the West shore of Lough Esk, about six miles from Donegal, Ireland, in the Yellow Sandstone Group of Griffiths' classification, probably Tournaisian in age.

The genus is characterised by having six rows of ambulacral plates and five rows of interambulacral plates hardly imbricating. Not all these are seen in the present specimen because the ambitus or mid-line is not visible. The central pair of each series of rows of ambulacral plates has a row of small 'knobs' which can be seen in the present specimen, though they are rather worn down by weathering.

This find is of exceptional interest owing to the rarity of the species, apart from the fact that complete echinoids are extremely uncommon in the Haw Bank Limestone. The photograph was made by Dr. J. Shirley, and the specimen has been presented, through the good offices of Dr. A. Raistrick, to the Geological Survey Museum, South Kensington (Registered number 86886).

***Ormosia sororcula* Zett. (Diptera, Tipulidae). New Yorkshire Record.—**

Two specimens of this (det. H.H., confirmed P. Freeman) were taken by myself at Bolton Woods on June 7th, 1956. One specimen has been deposited in the British Museum.—H. HENSON.

BOOK REVIEWS

The Natural History of the Scarborough District. Volume 2. Zoology. Edited by **G. B. Walsh** and **F. C. Rimington**. Pp. xiv+430, with 10 plates and a map of the district. The Scarborough Field Naturalists' Society, 25/-.

When, over two years ago, the first volume of this work, dealing mainly with the Geology and Botany of the district, was published, its wide scope and comprehensive treatment gave hope that the second volume would be on similar lines. Now that it is in our hands we can affirm without hesitation or reservation that the two volumes taken together are a credit to the Scarborough Field Naturalists' Society which has sponsored the work. In particular the Editor in Chief, Mr. G. B. Walsh, is to be congratulated on the successful conclusion of his labours. We trust that he will be stimulated to endure with patience the blindness that has overtaken him.

Scarborough, the Queen of Watering Places, how well it deserves the name! What memories it brings to mind, and mine stretch back over seventy years. I can remember as a rash youth clambering over the rocky boulders which then littered the foot of the Castle Hill and, warmed by the rays of the sun, provided a basking ground for numerous specimens of *Micralymma marinum* Stroem. The boulders have gone and the Marine Drive has taken their place, but it is good to read that *Micralymma* is still to be found there. Then there were larvae and imagines of *Cicindela campestris* common at Hutton Buscel, and if one were more than usually observant he might have the good fortune to see *Rhyssa persuasoria* L. hunting for its prey, the larvae of *Sirex gigas* L. All these and more, many more, are duly recorded in their proper places.

Another memory is of an exceptionally fine day in August when the Castle grounds were swarming with *Staphylinus olens* L. Never have I seen so many of this species in such a short time and in such a small area.

In a work which aims so high and may serve as a model for other Societies to imitate, it is inevitable that in some parts there will appear degrees of falling off; there is bound to be some evidence of failure due to the inequality of treatment, but this is hardly apparent here. There is a short history of the Scarborough Field Naturalists' Society and notes on such germane topics as melanism as it affects Lepidoptera and Coleoptera. Comparison with Kloet and Hincks' *Check List of British Insects* will reveal the families in which work is most needed. Take, for example, the family *Coccinellidae* in which are forty-two British species, some of which are of very rare occurrence; of these forty-two, twenty-six are recorded from the Scarborough District. Looking through a list of the remaining sixteen, it seems very unlikely that more than one species can have been omitted or mistaken for one of the forty-two species already admitted. We have no right to assume that any have been omitted or wrongly identified and yet the possibility does exist. For several years I had in my cabinet a specimen which carried on its pin a label written by a really good coleopterist which bore the name '*Micraspis sexdecimpunctata*, Filey'. Despite the authoritative naming the specimen was one of the many aberrations of *subcoccinella 24-punctata* L. It is here recorded from Filey. The most likely species to be added is in my experience *Propylea 14-punctata* L. which is not a common species, but is occasionally met with in Yorkshire.

The all-embracing, comprehensive method of the first volume is maintained in this second volume which, commencing with marine and freshwater invertebrates, proceeds successively through the earthworms, woodlice, centipedes and millipedes, to the Insecta in twenty orders and proceeds in an ascending scale from the arachnida and mollusca to vertebrates, fishes (marine and freshwater), reptiles, birds and mammals, with an extra article on 'The Mammals of Pleistocene and Prehistoric Times' by J. G. Rutter and a Foreword by Professor E. A. Spaul of the University of Leeds. In fact the book is as complete as the Scarborough Society could make it; and the two volumes will be valuable and necessary to all who take an interest in the fauna and flora of the Scarborough District. They will serve to show the student of these subjects where and how his services are most needed, and it should not be long before the accumulation of fresh work will make a new edition imperative.

It has been a great pleasure to examine these two volumes. We had to wait some time for their completion but the waiting has been worth while. They ought to be available in the Libraries of Natural History Societies, especially those in Yorkshire. In any case we hope soon to see numbers of fresh records sent in to *The Naturalist* for publication.

E.G.B.

Those of the Forest, by Wallace Byron Grange. Pp. 296. Faber & Faber, 1957. 21/-.

The unpretentious title masks a most ambitious, thoughtful and informed attempt to depict the nature, nurture and the entire environment of the American Snowshoe Rabbit. Its author is a member of the United States Biological Survey and has obviously a great command of biological concept and theory allied to a deep and close familiarity with creatures at first hand, both on the game farm which he maintains for restocking native species and in the wild, untrammelled state.

The story opens in the depths of a continental winter wherein the prolonged struggle for survival which devolves upon warm-blooded creatures in an almost entirely dormant world is perhaps the most selective of all the manifold pressures of organic evolution since it is ineluctable by chance or by devisal. He traces the first stirrings of the spring, the frenzy of the Snowshoe and all who share his world to increase and multiply to an extent which will make good the losses of the past and the demands of the future, predators and preyed upon alike depending upon the maintenance of a balance of population against the available food supply which itself is fundamentally determined by the vagaries of the weather. The whole background of the rabbit's world is carefully and often beautifully limned in throughout the account which contrives to remain detached and human while conveying the more limited awareness of his subject to all but the immediate impact of its surroundings.

The account continues through the cycle of the year with its story of biological interdependencies and, with the renewed onset of winter, the author casts back along the lineage of the Snowshoe, tracing as best he may the winnowing processes of climatic and vegetative change which have gone to produce a creature which is adapted to the needs of to-day by the pressures of the past and which is being conditioned for survival or extinction in the future by its struggle to exist to-day.

Space does not permit of a more thorough appraisal of a work which I cannot commend too highly. I think John Burroughs would have bared his head to it and it has been awarded his memorial medal.

A.H.

The Birds of the London Area since 1900, by the London Natural History Society. Pp. 306, 24 plates. Collins, 1957. 30/-.

Since the London area is defined, for the purposes of this work, as having a radius of 20 miles around the City, which gives about 1,200 square miles and comprises the whole of the county of Middlesex as well as large portions of the home counties, this is more than a study in urban populations. It is, in fact, a regional avifauna which includes the Metropolis.

The first third of the book is a symposium, by a dozen members of the society, devoted to the physical characteristics of the area, the artificial modifications such as reservoirs and sewage farms, which have ornithological significance, and especial considerations of migration and roosting as they apply to the area.

Apart from a full bibliography, the rest of the work is a fully annotated systematic list of the 245 species which have been positively identified. The notes on each species vary in length from a couple of lines to twice as many pages and it is refreshing to note that it is the chance rarities which are given short shrift while the plasticity of behaviour which has enabled the more familiar species to retain their hold on an increasingly unnatural habitat is often discussed at length.

Some of the more startling changes of the last half century such as the colonisation by Little Ringed Plover and Black Redstart and the grave diminution in the ranks of the Wryneck and Red-backed Shrike, although by no means confined to the area are greatly accentuated within it since the first two are aided by human disruption of the landscape and the second pair give way before urban development.

It is surprising that Colonel Meinertzhagen's record of cranes heard passing over Kensington on a foggy night in May has escaped the square bracket even though it is a great deal more likely to be correct than some of the more optimistic sight records which find credence in these days but from which this list is quite free.

The plates are for the most part devoted to the various types of natural habitat to be found in the green belt but one or two, like that of the Long-tailed Duck in St. James's Park serve to confirm unusual records.

There seems to me to be one human danger in this comprehensive type of survey; it licks the platter very clean.

A.H.

The Hawfinch, by **Guy Mountfort**. Pp. 176, with 18 photographs by the author, Eric Hosking, and others. Collin's New Naturalist Monographs Series. 18/-.

This is a very welcome and needed addition to available monographs, resulting from far more field experience of the species than probably any of the rest of us possess, and extended by 'combing the ornithological literature of Europe and Asia'. The expected bibliography 'has regrettably become a casualty of to-day's exorbitant publishing costs.' To most of us the Hawfinch is an elusive bird that frequently evades detection. To Mountfort, it is a garden-breeding species with which he has also specialised in various other parts of England, and abroad. The book is highly informative and very readable and is written 'without recourse to technicalities', such as prevent many a book and article to-day from being read by some of those for whom presumably they were intended. It can be recommended without reserve to expert and beginner, and will remain a standard part of ornithological literature. The titular descriptions of the four parts of plate 8 unfortunately seem to have got mixed.

R.C.

Voices of the Wild, by **Eric S. Simms**. Pp. 230 with 18 photographs by well-known bird photographers. Putnam. 21/-.

This book has reminded me of the pioneer bird photographers and their work, done before the turn of the century. The time when 'there was only one recognised objective if a man would pit his wits against animal and bird' dates back further than the 'generation ago' mentioned by Mr. Peter Scott in his foreword. Nor is tape recording of bird voices still in its infancy. We have exponents in Yorkshire who, like Eric Simms, show the same eagerness for adventure with a comparatively new tool, a new method of recording facts about birds, as the pioneer photographers, and a more modern eye for habitat and behaviour.

Mr. Simms who took over the direction of natural history sound recording for the B.B.C. when Ludwig Koch retired, has advantages. He zestfully describes adventures and experiences in England and Scotland, France and Spain. Everywhere he seems to have had expert local help in finding material. Certain well-known place-names sufficiently indicate many of the species whose songs, alarm notes, and even conversations Eric Simms has recorded: Tring, Minsmere, Breckland, Broadland, Hilbre, Rothiemurchus, Provence, Coto Doñana, Guadalquivir. He writes well about these and other areas and their bird life, avoiding unnecessary technicalities, and conveying his meaning without the use of so-called scientific jargon. A final chapter describes his technique.

The book makes interesting and informative reading. An index lists 280 birds and 12 mammals mentioned in the text. The first chapter deals with 'The Language of Badgers'.

R.C.

The London Bird Report for 1955. Pp. 58. The London Natural History Society. 3/6.

Comprises: 'Introduction'; 'List of Contributors'; 'Birds of the London Area, 1955' (33 pp.); 'A Report on the Bird Population of Beddington S. F., 1954-5' where a Trapping Station has been set up by B. S. Milne (16 pp.); 'Bird Ringing Report, 1955' by W. D. Park; and a brief reference to the Dungeness Bird Observatory. A photograph of a Jack Snipe by G. des Forges provides a frontispiece. Eighteen pairs of Little Ringed Plovers nested. Up to 30 Green Sandpipers were seen together in August.

Ornithological Report on the Farne Islands for 1956, by **Grace Hickling**. N.H.S. of Northumberland, Durham, and Newcastle-on-Tyne. 2/6.

A very interesting report to compare with that of Yorkshire. The wet late summer and gale-force winds caused high mortality among the terns on Brownsman and the Inner Farnes. East winds and rain produced abnormal numbers of drift migrants on September 3rd and 4th including Wrynecks and Barred Warblers, c. 40 Redstarts and c. 40 Pied Flycatchers. The systematic list gives 670 Eider Ducks as nesting on the Inner Farnes. 2,704 nestling and 903 adult birds were ringed. Recoveries include a Farne-ringed Lesser Black-backed Gull in Sicily and one of 1955 in Sierra Leone on 29/12/55.

R.C.

Practical Taxidermy, by **John W. Moyer**. Pp. 126 with 101 text figures. Thames & Hudson, 1957. 28/-.

This is the English edition of an American handbook published in 1953. Its author is on the staff of the Chicago Natural History Museum which has been famous for its high standards of natural history presentation since the pioneer days of Carl Akeley.

Copiously illustrated with photographs and drawings, the manual processes involved in removing the skins of vertebrates and mounting them with the aid of a variety of materials are clearly demonstrated. The author is careful to emphasise that only through a knowledge of the animal in life can the necessary realism be imparted to its stuffed remains since the characteristics of a species are so often as much a matter of poise and posture as of the colour of its fur or feathers.

The craft of the taxidermist contains a good deal that is empirical and though I would not from my own experience recommend all of the techniques advocated in this handbook, their results doubtless justify them as adequately as those more frequently practised in this country. On the other hand, many materials newly and usefully available, especially in the field of plastics and detergents, have become commonly employed since this work was first published in America so that from the museum viewpoint this English edition is as dated as its more comprehensive forerunners.

A.H.

Progress in the Study of the British Flora, edited by **J. E. Lousley**. Pp. 127 with 4 plates and 9 text figures. Published by the Botanical Society of the British Isles, c/o Department of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7. 20/-.

Following its now established custom the B.S.B.I. has issued in book form the collected papers and reports of the discussions to which they gave rise, delivered at its last Conference. The title indicates the theme of the Conference.

A valuable part in fostering a critical interest in British plants was played in the past by Exchange Clubs, now unhappily defunct. The history of their activities and the importance of their rôle forms the subject of an article by Mr. Lousley. Dr. Dony discusses local floras—an eminently British botanical activity—and their relation to the study of the British flora. Dr. Rose contributes some original views on how postglacial changes in climate with their related vegetation changes and succeeding human activities—both pre-historic and historically recent—may account for the discontinuous distributions shown by many species in Britain. Professor Valentine illustrates, with particular reference to the Primulaceae, the limitations of a purely insular study of British plants. Other papers are by Canon Raven on 'Early Development of a Knowledge of the British Flora'; Professor Richards on 'The Progress of the Biological Flora'; Dr. Whitehead on 'The Importance of Experimental Ecology to the Study of the British Flora'; and Dr. Walters on 'Distribution Maps of Plants—An Historical Survey'. Twenty-six pages devoted to detailed accounts of the exhibits shown during the meeting complete an interesting volume.

W.A.S.

A Weasel in my Meatsafe, by **Phil Drabble**. Pp. 192. Collins, 1957. 14/-.

A penchant for keeping animals in friendly captivity, tempered by a dispassionate but humane attitude towards them, finds the author in a position to add something to the oft-told tale of pet badgers, rats and fox-cubs. A predilection for the Mustelidae explains the title, and stoats and polecats as well as weasels have numbered among those animals with which he has maintained a somewhat uneasy co-existence.

Uninhibited by sentimentality, his accounts of successes and failures will be equally useful to those who would follow his example although the infinite patience which is a prerequisite for the taming of the highly-strung carnivores is only hinted at. It frequently happens to anyone with the reputation for being a naturalist that some orphan or foundling creature is laid upon his doorstep, and a great deal of information—or consolation—likely to be of great use on such occasions, lurks behind this unlikely title.

Mr. Drabble's style is easy and inviting and Ralph Thompson's drawings are discerning as well as skilful.

E.H.

Freshwater Fishes, by **Dr. Otto Schindler**, translated and edited by **P. A. Orkin**. Open Air Guides Series. Pp. 243, with 28 plates, 7 in colour. Thames and Hudson, 1957. 21/-.

This book deserved translation. As the translator says 'It is natural history, in the modern and best sense of the word.' The chapters dealing with structure are concerned with scales, fins, skeleton, viscera, swim bladder, reproductive system and sense organs, all in relation to the life of the fish. The accounts of reproduction and life-history are detailed and accurate, and there are chapters on the various kinds of river habitats and their relation to angling. One has often wondered why freshwater fish are never taken with the marks of lamprey attack upon them. The answer is given here quite simply; both marine and river lamprey feed only in the sea whilst the adult brook lamprey does not feed as an adult at all.

The last 70 pages are devoted to fish systematics. Keys to families and species are provided and all are described and figured in beautiful plates.

This is an excellent book; well written, interesting and accurate. Its systematic part is of permanent value for reference, whilst the general parts will not be exhausted in one reading. It is highly recommended, particularly to anglers, as a book to possess.

H.H.

The Spirit of the Wild, by **William J. Long**. Pp. 256. Heinemann, 1957. 18/-.

William J. Long was an American who died some years ago at an advanced age. His heyday was in the era of Theodore Roosevelt and the greater part of his written work was published 30-40 years ago. These essays are said to be unpublished material discovered by his daughter, herself a writer. I do not know if the articles have been refurbished but they form an orderly volume which flows unstilted in an idiom remarkably modern, even though it deals with a wild life now fast retreating even in the American wilderness. Most of the animals dealt with are those which for one reason or another are regularly hunted and it is clear that like so many competent naturalists the author made his introduction to wild life with gun in hand and that, as has so often happened, he discovered that the fun of hunting can be indefinitely prolonged by not pressing on the trigger.

Since the days of Nimrod, hunting has had a mythology of its own, much of it born of sound observation but fostered by dubious interpretation and Dr. Long has sought to verify or to explain away some of the legends of the camp-fire. While there is little in the book that is novel, its matter has never been expressed more neatly.

E.H.

Mermaids and Mastodons, by **Richard Carrington**. Pp. 252 with 15 plates and numerous text figures. Chatto & Windus, London, 1957. 25/-.

It is a strange thing that although the known realms of the animal world contain so much that moves us to wonder, awe and delight in its diversity and splendour of adaptation, yet the general order of human curiosity will have none of these but turns always for its satisfaction to the bizarre and the unknown. Dragons and sea-serpents, monsters and 'missing-links' alike have excited more universal interest, expenditure, both of time and money, and credulity, than could ever be extracted in the orderly pursuit of knowledge.

Mermaids and Mastodons typifies the phantasmagorical and the gigantic, whose story is told in popular fashion. The serpents of the 'Daedalus' and the 'Valhalla' are revived, the mermaid is related to the dugong, the Kraken explained. Curiosities, especially survivals, such as Steller's Sea Cow, *Peripatus* and *Latimeria*, *Notornis* and many others are ably treated in an easy journalistic style which has merited and received the Book Society commendation. This is the full measure of its value.

E.H.

The Microscope Made Easy, by **A. Laurence Wells**. Pp. 256, with 26 text-figures and 15 plates. Warne. 12/6.

This book covers, in an elementary and conversational way, both the methods of work in microscopy and the range of organisms, crystals, etc. which an amateur may wish to examine. There are chapters on mounting methods, materials, appliances, and others on pond life, marine work and on a variety of sources of subjects for observation.

Though some may find his style a little 'old-fashioned', the author is very practical, and suggests, for example, sources of supply readily available to the beginner. Thus he describes how marine plankton may be obtained by the dissection of fish from the fishmonger. The plates, some in colour, illustrate a wide range of plants and animals (though the author does not always give size or magnification).

The book should be useful in school libraries, and should prove a helpful preparation for more technical work with the standard laboratory manuals and textbooks.

An Introduction to Nature, by **Richard Martin**, and illustrated by Rein Stuurman. Books 1, 2 and 3, each containing about 40 pages and numerous line drawings and coloured plates. Blandford Press, 1957. 3/6 each.

These three books are intended for fairly young children, and contain brief and simply written accounts of various topics such as 'Nature at Night', 'Insects', 'Trees', etc., and especially, 'Bird Life'. Illustrations occupy the major part of the books, and the numerous plates in colour are very charming, being well drawn and delicately coloured. The printing, binding and reproduction of the coloured plates have been done very attractively by the Dutch printers. Children will find these books instructive and pleasant to read, and their parents will find the price reasonable.

The captions to the drawings of the Slow Worm and the Grass Snake have been accidentally interchanged, and the so-called Silkmoth looks suspiciously like a Tiger Moth.

B.A.K.

By Pond and Lake, by **Cicely M. Rutley**. Pp. 125, with 4 colour plates. Warne. 6/-.

A very elementary 'reader' describing the plants and animals to be found in and around fresh water. The writer ranges widely over her subject and includes a good deal of interesting information for the very young naturalist. It seems a pity that books of this type include so many rather feeble line drawings. Again it would have been helpful to have included some indication of the size of some of the less well-known creatures. We should surely start by putting the best before the children, rather than something which will 'do'. All the same the book should interest children in junior schools and in the first forms of secondary schools.

Filmstrips: British Woodland Birds. 32 frames in black and white. 15/- with notes. **Nature in Spring**. 28 frames in colour. 25/- with notes. **Poisonous Plants**. 21 frames in colour. 25/- with notes. **Climbing Plants**. 27 frames in colour. 25/- with notes. Educational Productions Ltd., East Ardsley, Yorks.

The first of these filmstrips consists of photographs of 16 species of woodland birds by John Wareham, with notes by P. E. Brown. The pictures are good and the notes useful, and the strip should be suitable for Natural History Societies and schools.

Nature in Spring is a very general strip, illustrating the usual range of topics which are touched upon in 'infants' and junior schools. Some of the pictures seem rather pointless even to the most city-bred child. One feels that the strip would be of more value if it included some close-up studies, e.g. female flowers of hazel. The colour is variable in quality.

Poisonous Plants was produced by E. C. Greenwood for the L.C.C. to enable children to recognise dangerous plants and help to discourage unhappy experiments with them. The frames consist of simple stylised drawings which remind one of portions of herbarium specimens. The pictures are generally adequate for the purpose intended, though without full habit pictures it is doubtful whether a child would recognise some of the plants from the drawings. The notes include interesting information about origin of names as well as general remarks about the plants. The strip would be of little use for elementary botany.

The pictures in *Climbing Plants* are classified under the headings 'twining', 'tendrils', 'scramblers' and 'root climbers'. They are for the most part good, and include numerous photographs taken at fairly close range. Even so, the detail does not always show very clearly, and one feels that the inclusion of some drawings would help, though of course these are available in textbooks. The strip should be useful for elementary botany in secondary schools as well as for more junior classes.

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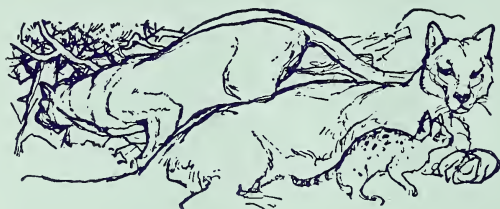
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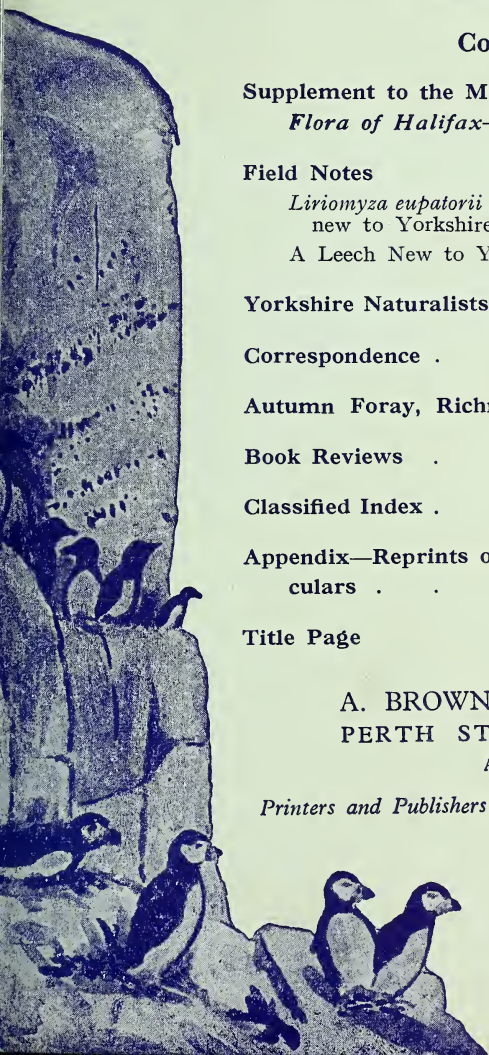
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SUPPLEMENT TO THE MOSSES AND HEPATICS OF THE FLORA OF HALIFAX

H. WALSH

CHARLES CROSSLAND (1844-1916) was responsible for the sections devoted to mosses and hepatics in Crump and Crossland's *Flora of Halifax* (1904). His collection of bryophytes was presented to the town in 1915 and is now housed at Belle Vue Museum. He also gave a copy of the *Halifax Flora* with a few additions and with the names of his specimens marked, to the Halifax Reference Library. A paper by him on the distribution of mosses and hepatics in the parish appeared in the *Halifax Naturalist* (1903-4). A photograph and sketch of Crossland appeared in *The Naturalist*, 1910, 367, under the title 'Prominent Yorkshire Workers' and his obituary notice by T. Sheppard appeared in *The Naturalist*, 1917, 24-26.

James Needham (1849-1913) of Hebden Bridge was an assiduous collector in that area, and his assistance in the compilation of the moss flora is acknowledged by Crossland. His herbarium is now in the keeping of the Hebden Bridge Scientific Society. Unfortunately the local mosses and hepatics have not been separated from the general collection. They are mounted on cards and there is no orderly arrangement. An obituary, with portrait, giving particulars of his botanical activities, was contributed by Crossland to *The Naturalist*, 1913, 294. A long obituary appeared in the *Hebden Bridge Times*.

After the publication of the *Halifax Flora* the recording of bryophytes ceased until the period of my own contributions from 1945-1955.

In 1904 ecology was in its early stages and the effect and importance of local impure limestones, the water from which either flows out on the sides of cloughs or to the surface as flushes, was not fully appreciated by local botanists. The calcified tufa of Ogden Clough is an example of this. Although long known it does not appear to have been specially searched for bryophytes. The recognition of this unusual geological feature led to the discovery of the hepatic *Moerckia flotowiana*, a rare inland Yorkshire liverwort.

This tufa is formed upon the moss *Cratoneuron commutatum* (*Hypnum commutatum*) and this was recorded there in 1889. Since 1900 this lime-loving moss has received ecological recognition as an indicator of alkaline or near-neutral waters. A survey of the parish for this moss led to a knowledge of its erratic but widespread distribution. Calcified 'tufa' with this moss is also present in the ravine below Lumb Falls, Crimsworth Dean, also in the Shelf portion of Sun Woods.

Visits have been made to Stansfield Moor but no situation has been found likely to yield the rarer records given by J. Nowell and others for this area.

The classification of mosses used in the *Flora* was replaced in 1950 by one published in the *Transactions of the British Bryological Society*. This is followed below, the name given in the *Flora* where changed being that enclosed in brackets. The sequence of species also follows that adopted in *Trans. Brit. Bryol. Soc.*, 1950.

All recent records have been verified by referees of the British Bryological Society.

Abbreviations

B.B.S.—British Bryological Society.

Nat. —*The Naturalist*.

H.W. —H. Walsh.

SPHAGNACEAE

No local botanists have added records to this group since 1904. The only additions have been extracted from Part 2, *Yorkshire Naturalists' Union Transactions*, 1946, by A. Thompson, and the nomenclature altered to conform with that publication.

Sphagnum plumulosum Röhl. (*S. subnitens* Russ. & Warnst.).

A number of colour varieties included in the 1904 *Flora* are not given in the 1946 list.

Sphagnum recurvum P. Beauv. (*S. recurvum* Russ. & Warnst. var. *mucronatum* Warnst.).

var. *parvulum* Warnst. Hebden Bridge, J. Needham. *Nat.*, 1917, 395.

Sphagnum rufescens Warnst.

Mr. A. Thompson in *Yorkshire Sphagna*, 1946, comments: 'Plants thus named seem not to be true *rufescens*, but to be reddish forms of *S. auriculatum* or *S. inundatum* and need re-examination.'

Sphagnum crassiciadium Warnst.

var. *intermedium* Warnst. Hebden Bridge, W. Ingham. *Nat.*, 1917.

Sphagnum imbricatum Hornsch. (*S. turfaceum* Warnst.).

Comment in *Yorkshire Sphagna*, 1946: 'Many of the older records for *S. turfaceum* are suspect.' But both Crimsworth & Hardcastle records are included in this list without any indication of re-examination.—H.W.

Sphagnum cymbifolium Ehrh.

The varieties *glaucescens* and *pallescent* given in the 1904 *Flora* are not included in recent lists.

ANDREAEACEAE

Andreaea rupestris Hedw. (*A. petrophila* Ehrh.).

No further records.

Andreaea rothii Web. & Mohr.

The record for Hebden Valley was confirmed in 1948-9. It was gathered by G. A. Shaw, of Shipley, and myself, on April 25th, 1948, but the exact locality was not noted. It was later gathered on September 26th, 1949, growing upon a huge boulder in the river bed just past the high cliff at High Greenwood.

var. *crassinervia* (Bruch) Moenk. (*A. crassinervia* Bruch). No further record.

POLYTRICHACEAE

Atrichum crispum (James) Sull. (*Catharinea crispa* James).

It has still the status of abundant by stream sides, particularly Hardcastle Craggs, but it also occurs in two very unusual places: (1) Mytholmroyd, canal verge, tow path, in peaty soil, many separate patches; (2) Cragg Vale, in the gutter by the side of the road leading from the church to Withins Reservoir.

Having no fruit, the plants being male, and no known special method of vegetative reproduction, its distribution since 1860 remains a puzzle.

Atrichum undulatum (Hedw.) P. Beauv. (*Catharinea undulata* (L.) Web. & Mohr).

Still generally distributed.

var. *minus* (Lam. & DC.) Web. & Mohr.

The record in the Appendix on page 309 was found to be an error, and was corrected on the packet in C. Crossland's Herbarium.

Oligotrichum hercynicum (Hedw.) Lam. & DC. (*Oligotrichum incurvum* (Huds.) Lindb.).

This moss is more plentiful than the earlier records suggest. Path sides and stream sides. Jumble Hole Clough; Booth Dean, Rishworth and Ryburn Valley; road to Withins Reservoir, Cragg Vale; Gorple area Alcomden stream side in quantity; Luddenden Dean.

Polytrichum nanum Hedw. (*P. nanum* (Dill) Neck.).

No further records.

Polytrichum aloides Hedw.

Still well distributed and plentiful. Fruits freely. Stream sides and banks in woods.

Polytrichum urnigerum Hedw. (*P. urnigerum* L.).

Sparingly above Hardcastle Craggs in a roadside quarry between Lady Royd and top of Walshaw Clough (1947.)

Vicinity of Gorple Reservoir in a few places on the roadside banks approaching from Colne Road and in a few places near Reservoir on path edges (1948-9). Hardcastle Craggs, on a soil-covered stone on the Wadsworth side of the river, between Cosy Corner stepping stone and Gibson Mill (1951).

Polytrichum alpinum Hedw. (*P. alpinum* L.).

On a packet ex J. Nowell's Herbarium in the Hebden Bridge Scientific Society's collection, it is stated: 'roadside, Ridge Gate, Heptonstall, 1863, W. Patman, Hebden Bridge' and the remark: 'I think this should be roadside, Stiperden, Stansfield.' No further record.

Polytrichum piliferum Hedw. (*P. piliferum* Schreb.).

Todmorden Flora gives on dry banks, Harley Wood and other similar situations. Roadside near Gorple Reservoir; Colden Valley, path side of disused dams above mill ruins (1948).

Polytrichum juniperinum Hedw. (*P. juniperinum* Willd.).

Vicinity of Gorple Reservoir, on road sides; road to Gorple as it branches from Colne Road (1948.)

Polytrichum alpestre Hoppe (*P. strictum* Banks).

No further record.

Polytrichum gracile Sm. (*P. gracile* Dicks.)

This moss is impossible to distinguish in the field from *P. commune* and the distribution of the two remains in doubt. It is probably plentiful and generally distributed at all altitudes. It appears to fruit more freely in this district than *P. commune*, which is generally sterile. It is present in a few places along canal verge from Luddenden Foot to Brearley and probably in other areas.

Along the roadside bank leading to Hardcastle Craggs from Colne Road, Greenwood Lea. Plentiful and often seen fruiting. Seen also in the Coley and Norwood Green area (1950). Bottom of Sage Clough, near Millbank, field edge, fruiting freely (1951).

Polytrichum formosum Hedw.

High Greenwood, *c.fr.* H. Walsh (1948).

Polytrichum commune Hedw. (*P. commune* L.).

The last three species (*P. gracile*, *formosum* and *commune*) have never been locally investigated. Plants of this group are numerous and often barren, and thus leaf sections are generally required. Papers on distribution state that *P. formosum* is a woodland species and *P. commune* a species of more open places, but the latter is not uncommon in the woods at Hardcastle Craggs. My experience has been that they occur in the following order of frequency: *P. commune*, *gracile* and *formosum*, the last being rare.

BUXBAUMIACEAE

Buxbaumia aphylla Hedw.

Hebden Bridge, wall top, Midgehole Road, low side, one plant *c.fr.* See *Nat.*, 1947, 58.

Diphyscium foliosum (Hedw.) Mohr.

No further record.

FISSIDENTACEAE

Fissidens viridulus (Web. & Mohr) Wahl.

This and the next species are not easily separated and errors may have occurred. There are no specimens in C. Crossland's Herbarium. 1948—Hardcastle Craggs, on rock outcrop in a rocky hollow on the Wadsworth side of the river between Rom Folly and Cosy Corner stepping stones.

Fissidens pusillus Wils. ex Milde.

This is a very small moss and has to be carefully collected. There are no specimens in C. Crossland's Herbarium. The records in the *Flora of Todmorden*, 1911, are out of the parish, except one for Hebden Valley. In this district, in my experience, it is semi-aquatic or aquatic, growing on rough gritstone on or below water level. It grows and fruits in the well trough, Dye Houses, Luddenden Foot, 1947-1955. 1947—Charlestown, canal side; Eastwood, Ingham Clough; Luddenden Foot, Hand Carr Clough, on boulders in the stream. Probably well distributed if specially looked for in these positions. At the water level and on wet boulders it fruits freely.

Fissidens bryoides Hedw.

Generally distributed and fruits freely, woodland and cloughs.

Fissidens incurvus Starke ex Web. & Mohr.

No further record.

Fissidens exilis Hedw.

Pasture field, second field after passing Hand Carr Clough, Luddenden Foot (1949). Sun Wood, Mrs. J. Appleyard (1950).

Fissidens osmundoides Hedw.

Horse Clough, above Lumb Fall, J. Needham (1902).

No further record.

Fissidens taxifolius Hedw.

In a few places on wet rocks by the riverside, Cragg Vale; Colden Valley; Crimsworth Dean; Luddenden Clough; Luddenden Dean; Sun Wood (1948).

Probably present in most of the cloughs and on wet rocks by stream sides.

Fissidens cristatus Wils. (*F. decipiens* De Not.).

Eaves Wood, limestone outcrop; Hardcastle Craggs, limestone outcrop (1947).

Probably confined to these two stations as it only occurs on limestone.

Fissidens adianthoides Hedw.

Many stations.

Fissidens tamarindifolius Wils. Recorded in the 1904 *Flora* by J. Nowell, is a form of many species, and the name is obsolete.

ARCHIDIACEAE

Archidium alternifolium (Hedw.) Schp. (*A. alternifolium* (Dicks.) Schp.).

No further record.

DICRANACEAE

Pleuridium acuminatum Lindb. (*P. subulatum* (Huds.) Rabh.).

The status of this moss as given in the *Flora* should be taken with some caution. *Flora of Todmorden* states: Royd Hills, Harley Wood, fugitive and rare. The Yorkshire records give only one or two stations near Leeds for S.W. Yorks. Probably most of the records refer to *Pleuridium axillare*.

Pleuridium subulatum (Hedw.) Lindb. (*P. alternifolium* (Dicks.) Brid.).

Pasture field, Broadbottom, Mytholmroyd. *Nat.*, 1950, p. 37.

Ditrichum heteromallum (Hedw.) E. G. Britton (*D. homomallum* (Hedw.) Hampe). Crimsworth Dean, W. H. Burrell (1929). Hardcastle Crag, near bottom of Greenwood Lea Clough, on bank by path side (1951). *Flora of Todmorden* gives Hebden Valley.

Ceratodon purpureus (Hedw.) Brid.

Throughout the parish on banks, walls, waste places, tips, paths, between setts, fields and woodland, etc.

Brachydontium trichodes (Web. fil.) Bruch (*Brachyodus trichodes* (W.M.) Furnr.). 1949-1951. Foster or White Lee Clough, Mytholmroyd, on a gritstone rock by the stream side, the only site seen, fruiting.

Seligeria doniana (Sm.) C.M.

Flora of Todmorden: On shady rocks near Lumb Bank Mill, Mytholm (Colden) Valley; Hardcastle Crag. First outcrop above Gibson Mill, Hardcastle, on Wadsworth side, *c.fr.*, in small amount (1949).

Seligeria recurvata (Hedw.) B. & S.

Crimsworth Dean, ravine below Lumb Fall (1947). 1948-1950. Blake Dean Bridge; Hardcastle Crag, first riverside outcrop above Gibson Mill, Wadsworth side; on rocks at top of a rocky depression nearly opposite Cosy Corner; on a large boulder by riverside and path above Gibson Mill.

Blindia acuta (Hedw.) B. & S. (*B. acuta* (Huds.) B. & S.).

Cragg Brook side, wet rocks above Victoria Mill; Colden Clough, wet riverside cliff where *Hypnum commutatum* grows; Crimsworth Dean, above Grainwater and in ravine below Lumb Fall (1948).

var. *trichodes* (Wils.) Braithw. Saltonstall, Catty Well Clough, Mrs. J. Appleyard, *Nat.*, 1956, 30.

Pseudephemerum nitidum (Hedw.) C. Jens. (*Pleuridium axillare* (Dicks.) Lindb.). Many of the records for *Pleuridium acuminatum* Lindb. (*P. subulatum* (Huds.) Rabh.) doubtless refer to this plant, which is fairly plentifully distributed, particularly in pasture fields with a clay subsoil, on bared places.

Dicranella squarrosa (Starke) Schp.

Still plentiful in the habitats given in the *Flora*, and widely dispersed.

Dicranella schreberiana (Hedw.) Dix. (*D. schreberi* (Swartz.) Schp.).

Cragg Vale, in the marshy field below Withins Reservoir where Butterwort grows (1948). Crimsworth Dean, above Lumb Falls, in flush where *Hypnum commutatum* occurs (1952).

Dicranella varia (Hedw.) Schp.

No further record.

Dicranella rufescens (Sm.) Schp.

It may be well distributed but that is not my experience. The only record I have is for Ingham Clough (1955).

Dicranella crispa (Hedw.) Schp.

J. Needham's Hardcastle record is doubtful, for specimens in J. Needham's microslide herbarium were *D. cerviculata*, the swelling at base of capsule conspicuous. H.W.

Dicranella subulata (Hedw.) Schp. (*D. secunda* (Swartz) Lindb.).

No further record. There are specimens in J. Needham's slide herbarium in the possession of Mr. E. Dearing. H.W.

Dicranella cerviculata (Hedw.) Schp.

Still very plentiful and fruits abundantly. In a ditch on Soil Hill, Bradshaw, in great quantity (1950).

Dicranella heteromalla (Hedw.) Schp.

Still well distributed over the parish.

Cynodontium bruntoni (Sm.) B. & S.

No further record.

Dichodontium pellucidum (Hedw.) Schp.

Plentiful in the recorded and similar habitats.

var. *flavescens* (Turn.) C. Jens. (*D. flavescens* (Dicks.) Lindb.).

Turner Clough, Rishworth (1947).

Dicranoweissia cirrata (Hedw.) Lindb.

Colden Valley, wall by mill ruins (1948). Hardcastle Crag, wall between Gibson Mill and cottages, Heptonstall (1949).

Dicranum fuscescens Turn.

In addition to the records in the *Flora*, there are packets from Pecket Wood, Greaves Clough, Hardcastle Crag, in C. Crossland's Herbarium. Crimsworth Dean (1948).

Dicranum majus Turn. (*D. majus* Sm.).

Hardcastle, Gibson Wood, near Mill; High Greenwood (1947).

Dicranum bonjeani De Not.

Flora of Todmorden states: wet pastures near Harley Wood. No further record.

Dicranum scoparium Hedw.

No change in distribution.

var. *spadiceum* (Zett.) Boul. (var. *ericetorum* Corbiere).

Crimsworth Dean; moors above Widdop Reservoir, F. Murgatroyd (1949).

Hebden Valley, High Greenwood (1950). Jumble Hole Valley; Colden Valley (1951). This var. is more plentiful than the type and varies considerably in height. Is tallest at Widdop.

Dicranodontium denudatum (Brid.) E. G. Britton (*D. longirostre* B. & S.).

Beaumont Clough near Hebden Bridge (1947). Hardcastle Crag in various places. This moss grows on fallen trees and large boulders, and has probably been passed over for *Campylopus flexuosus*, which it closely resembles and grows in similar places; Sun Wood, Mrs. J. Appleyard, *certe* B.B.S. Referee (1950).

Campylopus fragilis (Turn.) B. & S.

Flora of Todmorden gives (under *C. densus*) Staups Clough. No further record.

Campylopus piriformis (Schultz) Brid.

This species and the following resemble each other. In Dixon, 1924, it is only given sub-specific rank. The B.B.S. 1950 list gives it specific rank. The absence of records in the 1904 *Flora* reflects the resemblance. It is plentiful on the drier heathy moors of the parish and also present on peat in woods.

Campylopus flexuosus (Hedw.) Brid.

Still very plentiful on boulders in woods and cloughs.

Leucobryum glaucum (Hedw.) Schp.

Crossland's locality, in the Hardcastle Woods on the low side of the road between the Lodge and Gibson Mill, is the only one in which I have seen it. It is before reaching Rom Folly (1953).

ENCALYPTACEAE

Encalypta vulgaris Hedw.

I have not found this species.

Encalypta streptocarpa Hedw.

This moss grows on old mortar in this district and can be expected on bridges and walls. Additional records are: old railways piers to Walshaw, above High Greenwood; bridge at Gibson Mill, Hardcastle; hillside above Charlestown, cottage ruins; Midge-hole roadside walls in many places; Booth, on wall near 'Woodlands'; Luddenden Dean; bridge, bottom of Greave Clough, Colne Road; walls near Greenwood Lea, Heptonstall.

POTTIACEAE

Tortula subulata Hedw.

Pecket Wood, roadside wall, in a few places (1950); Hardcastle Crag, base of Hardcastle Cliff.

Tortula ruralis (Hedw.) Crome.

No further record.

Tortula muralis Hedw.

Records too numerous to itemise.

Tortula marginata (Bry. Eur.) Spruce (*T. marginata* Schp.).

No further record.

Aloina aloides (Schultz) De Not. (*Tortula aloides* (Koch) De Not.).

No further record.

Pottia truncata (Hedw.) Furnr. (*P. truncatula* (L.) Furnr.).

Luddenden Foot; Mytholmroyd; Midgley (1949).

Pottia davalliana (Sm.) C. Jens. (*P. minutula* Furnr.).

No further record.

Pottia recta (Sm.) Mitt. (*P. recta* (With.) Mitt.).

No further record. Not included in the *Flora of Todmorden*. A moss generally of calcareous soils.

Phascum cuspidatum Hedw. (*P. cuspidatum* Schreb.)

I have not found it common, but not searched for it particularly.

Midgley; Cragg Vale (1948).

Phascum curvicolle Hedw. (*P. curvicolle* Ehrh.).

No further record. Generally a moss of calcareous soils.

Acaulon muticum (Brid.) C.M. (*A. muticum* C. Muel.).

No further record.

Barbula convoluta Hedw.

Rishworth, Bogden Valley, wall top; Siddal, wall by canal; Luddenden Foot, wall; Lighthazels, agricultural lime dump (1946); Jumble Hole Valley, Hebden Bridge, *c.fr.*, on walls and about mill ruins at bottom; wall near Greenwood Lea, Colne Road, *c.fr.*, and in many other similar situations.

Although not strictly a lime-confined moss the records in this district of acid soils suggest a preference for alkaline sites. It is not an uncommon moss on the mortar of walls and about mill ruins, and it is plentiful as a ground moss about roads. The situations for the latter are too numerous to specify, and generally, but not always, the soil when tested with acid gives a visual reaction. The use of limestone chippings for road making and repairing is no doubt connected and it would appear to be much more plentiful than in 1904. On one occasion a field at the edge of Erringden Moor had been limed, the dumps had lain for a time before spreading and on most of these positions the moss was growing and absent between.

Barbula unguiculata Hedw. (*B. unguiculata* (Huds.) Hedw.).

Midge-hole, Hebden Bridge, roadside wall (1949).

Barbula revoluta Brid. (*B. revoluta* (Schrad) Brid.).

No further record. Not included in the *Flora of Todmorden*.

Barbula hornschiuchiana Schultz.

This record was corrected later on the packet in C. Crossland's Herbarium to *B. unguiculata*.

Barbula fallax Hedw.

Midge-hole, roadside wall; Sun Wood, Shelf (1949).

Barbula rigidula (Hedw.) Mitt.

Flora of Todmorden gives on moist rocks by streamside, Hudson Clough.

Wall, Rom Folly, Hardcastle Crag (1947).

Barbula trifaria (Hedw.) Mitt. (*B. lurida* Lindb.).

No further record.

Barbula tophacea (Brid.) Mitt.

Red-water Clough, Cornholme; Bogden Valley (1946). Ogden Kirk; Sun Wood, Shelf (1947). Only found on rocks wet with calcareous water.

Barbula cylindrica (Tayl.) Schp.

Midge-hole road walls, W. H. Burrell (1915). Still there, 1946. Lee Wood road, on wall (1948).

Barbula recurvirostris (Hedw.) Dix. (*B. rubella* (Hoff.) Mitt.).

Luddenden; Cragg Vale; Heptonstall, etc. Well distributed on old walls, bridges, etc.

Gymnostomum aeruginosum Sm. (*Weissia rupestris* (Schleich) C.M.).

Crimsworth Dean, W. H. Burrell (1929). Ogden Kirk (1944); Hardcastle Crag, in quantity on a rock face by river pathside above Gibson Mill; Cragg Vale, rocks on riverside (1947). Only found on rocks wet with calcareous water.

- Gymnostomum recurvirostrum* Hedw. (*Weisia curvirostris* (Ehrh.) C.M.).
No further record.
- Euccladium verticillatum* (With.) B. & S. (*Weisia verticillata* Brid.).
Cragg Vale, rocks by riverside. *Nat.*, Oct., 1955. High Greenwood, cliff by riverside; Sun Wood, Shelf, in calcareous flush; Ogden Kirk, tufa site (1946). Only found on rocks wet with calcareous water.
- Tortella tortuosa* (Hedw.) Limpr. (*Trichostomum tortuosum* (L.) Schrank).
Eaves Wood, calcareous outcrop; Hardcastle Crag, calcareous outcrop (1946).
A limestone moss.
- Trichostomum tenuirostre* (Hook. & Tayl.) Lindb.
Sun Wood, Shelf (1946). Hardcastle Crag, on Wadsworth side, in rocky depression nearly opposite Cosy Corner (calcareous outcrop); outcrop above Gibson Mill.
- Weissia controversa* Hedw. (*Weisia viridula* (L.) Hedw.).
Flora of Todmorden gives: banks in Harley Wood; Staups Clough. Eaves Wood, calcareous outcrop; Crimsworth Dean; Cragg Vale; Mytholmroyd; Hardcastle Craggs, plentiful at base of cliff by riverside (1946).
- Weissia crispata* (Nees & Hornsch.) Jur.
1904. Recorded by W. Ingham, on Y.N.U. visit to Hardcastle, on steep crag by riverside.
- Weissia microstoma* (Hedw.) C.M. (*Weisia microstoma* C.M.).
Flora of Todmorden gives Staups Clough. No further record.
- Weissia squarrosa* (Nees & Hornsch.) C.M. (*Weisia squarrosa* C.M.).
The only record is that given for Copley in the *Flora*, and the material in C. Crossland's Herbarium is in poor condition, and I consider this record doubtful.
H.W.
- Weissia rostellata* (Brid.) Lindb.
Bare place on edge of damp field, Hipperholme, Mrs. J. Appleyard. *Nat.*, 1954.
- Leptodontium flexifolium* (Sm.) Hampe (*L. flexifolium* (Dicks.) Hampe).
Flora of Todmorden gives Staups Clough. Eaves Wood, calcareous outcrop (1946 and 1951).
- Grimmia apocarpa* Hedw.
On wall between Gibson Mill bridge and Gibson Wood Cottage (1947).
- Grimmia doniana* Sm.
No further record.
- Grimmia pulvinata* (Hedw.) Sm. (*G. pulvinata* Sm.).
Wall between Gibson Mill and Gibson Wood Cottages, Hardcastle (1947); wall near Gorple Reservoir (1948); Pecket Wood, roadside walls; Hardcastle, base of cliff by riverside (1950).
- Grimmia trichophylla* Grev.
No further record.
- Racomitrium aciculare* (Hedw.) Brid. (*R. aciculare* (L.) Brid.).
Still well distributed in the parish.
- Racomitrium fasciculare* (Hedw.) Brid.
Flora of Todmorden gives Harley Wood. Peckett Wood walls; Hardcastle Crag; Gibson Mill bridge and vicinity; Crimsworth Dean; Greave Clough Bridge; Colden Valley; Luddenden Dean (1947-1950).
- Racomitrium heterostichum* (Hedw.) Brid.
No further record.
- Racomitrium canescens* (Hedw.) Brid.
No further record. The cloughs mentioned in *Flora of Todmorden* are in Lancashire.
- Racomitrium lanuginosum* (Hedw.) Brid.
Hardcastle Crag (1945); Luddenden Dean; Luddenden Church Holme; Crimsworth Dean, bottom of Shackleton Hill; Blake Dean, F. Murgatroyd; walls about Pecket Wood; High Greenwood; Midge-hole Road, Hebden Bridge (1946); Eastwood; Midgeley Moor, rocky hollow end of Reservoirs, F. Murgatroyd; walls about Lee Wood, Hebden Bridge (1947); wall top near Greenwood Lee, Colne Road; Gorple (1948); wall, edge of Eaves Wood, Heptonstall (1951).
In parts of Britain this moss is very abundant in big cushions on tracts of barren heathland. In this district it generally occurs on walls and stones in small inconspicuous tufts, often untypical, and can only be regarded as depauperate.

DISCELIACEAE

Discelium nudum (Dicks.) Brid.

The absence of records later than those in the *Flora* is surprising, for this moss is not rare on bare clayey steep sides of streams as in the cloughs, on shale. It is a moss of short duration and only noticed when fruiting which it does freely. The winter period with its frosts and thaws is apt to cause a disintegration of the surface upon which it grows and positional records only denote that it may be expected to occur in that locality.

Steep clay banks along Royd Hall Beck (1946); Copley; Pike Clough, Rishworth; Beaumont Clough, Hebden Bridge; Ingham Clough; Hardcastle Craggs, riverside near Cosy Corner.

FUNARIACEAE

Funaria hygrometrica Hedw. (*F. hygrometrica* (L.) Sibth.).

May be expected to appear anywhere where soil has been bared, and fruits profusely. Mr. Crossland notes its liking for burnt ground with wood ashes, and for lime, even growing on dumps of agricultural lime.

Funaria attenuata (Dicks.) Lindb.

1867. Gorple, below Crib, J. Nowell. See *Nat.*, 1952, 32.

Funaria obtusa (Dicks.) Lindb. (*F. ericetorum* Dixon).

Rough hillside pasture, above Pecket Wood, *c.fr.* (1951). Northowram, Back Clough, near Chelsea Valley (1952).

Physcomitrium pyriforme (Hedw.) Brid.

No further record.

EPHEMERACEAE

Ephemerum serratum (Hedw.) Hampe.

Broadhead Clough, Cragg Vale, in pasture field (1945). Foster Clough, Mytholmroyd, in pasture field (1950).

var. *angustifolium* B. & S.

Pasture field, second past Hand Carr Clough, Luddenden Foot; pasture field, edge of Red Acre Wood, Broadbottom, Mytholmroyd (1950). *Nat.*, 1951, 91.

SPLACHNACEAE

Splachnum ovatum Hedw. (*S. sphaericum* L. fil.).

Site of Flints Reservoir, Lighthazels, F. Murgatroyd (1947). Soil Hill, Ogden, in small amount, H.W. (1949). Colden Valley, above the village, towards Noah Dale, rough pasture land, H.W. (1950). Gorple, moorland, on sheep dung, H.W. (1949). Jumble Hole Valley, Staups Moor Side, on sheep dung, H.W. (1951). Edge of Midgley Moor, after passing reservoirs on Luddenden Dean side.

Up to 1948 the site on Erringden, top of Wood Hey Clough, referred to by J. Needham in the *Flora* produced this moss in quantity but about that time cattle-grazing over that area was discontinued and it became difficult to find. It has been collected on other parts of the Moor to Studley Pike and on rough hillside pasture below the Pike. It occurs only on the dung of animals grazing on moorland, rarely below 1,000 feet. Despite the large amount of dung in cultivated pasture fields it has not been found even in fields adjoining the moor.

SCHISTOSTEGACEAE

Schistostega pennata (Hedw.) Hook. & Tayl. (*S. osmundacea* (Dicks.) Mohr.).

In Mr. Crossland's copy of the *Halifax Flora* mention is made of a letter from J. Nowell to R. Leyland which says: 'found near the top of Thieveley (?) Scouts but only in small amount' (1840). Out Hey, Colden Valley, W. Uttley (1941); disused quarries in the Colden Valley (1945); plentiful over a wide area among the grit outcrops in and about High Greenwood; Jumble Hole Clough, two sites; Staups Moor; Greave Clough; Upper Ryburn Valley, Rishworth. *The Naturalist*, 1948, 50, contains a more complete note.

TETRAPHIDACEAE

Tetraphis pellucida Hedw.

Still plentiful, not only in woodland but on moorland at the base of heather, etc. Has now a severe competitor in *Orthodontium lineare* Schwaegr.

Tetraphis browniana (Dicks.) Grev.

Crimsworth Dean, W. H. Burrell (*Nat.*, 1915); Saltonstall, Catty Clough, stream-side rocks (1945); Hardcastle Crags, outcrop above Gibson Mill (1949); White Lee or Foster Clough, Mytholmroyd (1951).

BRYACEAE

Orthodontium lineare Schwaegr. (*O. gracile* (Wils.) Schwaegr. var. *heterocarpum* W. Watson).

The first British record of this moss was made in 1920 in Cheshire. After publication of the description records became numerous especially in S.W. Yorkshire. In 1940 W. H. Burrell wrote an article in *The Naturalist*, pp. 295-302, dealing with its distribution (see this for more detailed information, also Y.N.U. Bryologists at Bolton Abbey Woods, H. Walsh, *Nat.*, 1948, 131). In his article Burrell stated: 'it is now known to be one of the commonest mosses on the Pennine Moors from Sheffield to Skipton. In less profusion it is a woodland moss throughout S.W. Yorks.' Since 1940 records indicate its wide distribution both on moors and in woods.

The first local record was made on a visit of the Y.N.U. Bryologists to Crimsworth Dean in 1929. In the parish it is more noticeable to the west of Luddenden Foot, at present it is only in small amount in Luddenden Dean, rather more on the edge of Midgley Moor, but in Hardcastle Crags it is one of, if not the most, plentiful moss and extends over the whole area. It will grow anywhere—on decaying vegetation or peat, at the base of trees it forms extensive cushions and is conspicuous by the vast number of spore capsules. Situations are too numerous to mention, but the parish to the west of Todmorden has not been investigated.

Leptobryum pyriforme (Hedw.) Wils.

May be frequent about greenhouses as stated in the *Flora*, but not away from them. Luddenden Foot, under bridges; Halifax, near fall-pipe outlet, F. Schofield (1950).

Pohlia elongata Hedw. (*Webera elongata* (Hedw.) Schwgr.).

No further record.

Pohlia cruda Hedw. (*Webera cruda* (L.) Schwgr.).

No further record.

Pohlia nutans (Hedw.) Lindb. (*Webera nutans* (Schraeb.) Hedw.).

Still very plentiful in various situations.

Pohlia rothii (Correns) Broth. (*Webera annotina* (Hedw.) Bruch var. *erecta* (Roth) Correns).

Near Mytholmroyd, wet margin of hillside path; wet ground, Greenwood Lee entrance to Hardcastle Crags (1948); roadside above Bogden Reservoir, Rishworth (1949).

Pohlia annotina (Hedw.) Loeske.

The records in the 1904 *Flora* all refer to the following species (*P. proligera* Lindb.) which was at that time included.

Crimsworth Dean; Broadhead Clough (1917); Hardcastle Crags, wet margin of road just above Lodge; Luddenden Foot, marshy area in field at bottom of Boulder Clough (1948); Heptonstall, Greenwood Lee stream side; Colden Valley, wet margin of path (1949); Gibson Wood, Hardcastle, damp bank by path; Peckett Well, field above Peckett Wood (1951).

Pohlia proligera Lindb.

This moss is too widespread to detail localities. Since 1900 as an urban moss it must have spread rapidly by means of minute stem propagula or 'bulbils'. In less urban positions it grows on stone faces in disused quarries. It is very plentiful in an old quarry near Midgley Moor Reservoir; rock outcrops by the side of cloughs and on stones, etc., by stream sides.

The following are a few selected records to indicate positions: Brookfoot Dye-works Tip, Shibden Valley; Luddenden Foot and Luddenden—more plentiful in these areas than any other; Mytholmroyd; Cragg Vale; Hebden Bridge; Eastwood; Lumb Butts; Langfield Moor; Blackburn Valley; Red-water Clough (boundary stream of parish at Cornholme); Hardcastle Crags; Salterhebble; Tag Lock; near Gorpole Reservoir; Triangle; Ingham Clough; Colden Clough; Stump Cross.

Grows freely in gutter sides of steep hillside roads, canal and earthy cinder

- paths, between setts, walls, edge of woods, tips, etc. Cinder path from Sterns Mill Bridge along edge of sewage works, Sowerby Bridge, very plentiful. See *The Naturalist*, July-Sept., 1951, 107.
- Pohlia albicans* (Wahl.) Lindb. (*Webera albicans* (Wahl.) Schp.).
No further record.
- Pohlia delicatula* (Hedw.) Grout (*Webera carnea* (L.) Schp.).
No further record.
- Plagiobryum zierii* (Hedw.) Lindb.
No further record.
- Bryum pendulum* (Hornsch.) Schp.
No further record.
- Bryum inclinatum* (Brid.) Bland.
No further record.
- Bryum uliginosum* (Bruch ex Brid.) B. & S.
No further record.
- Bryum pallens* (Brid.) Rohl (*B. pallens* Sw.).
No further record.
- Bryum pseudotriquetrum* (Hedw.) Schwaegr.
No further record.
var. *bimum* (Brid.) Richards & Wallace (*Bryum bimum* Schreb.).
No further record.
- Bryum affine* (Bruch) F. Schultz.
No further record.
- Bryum pallescens* Schleich.
No further record.
- Bryum intermedium* (Ludw.) Brid.
No further record.
- Bryum caespiticiu*m Hedw.
Widespread—one of the most plentiful of the Bryums.
- Bryum argenteu*m Hedw.
As above; essentially an urban moss, and not plentiful in other situations.
- Bryum bicolor* Dicks. (*B. atropurpureu*m W. & M.).
No further record.
var. *gracilentu*m Tayl. ex Braith.
Wheatley Valley, Jumbles, stream side; Dodge, stone in stream (1949);
Mytholmroyd, dam overflow, bottom of Wood Hey Clough (1950).
- Bryum alpinu*m With.
No further record.
var. *viride* Husn.
Gritstone boulder in marsh, Cragg Vale (1954) (the marshy field where Sundew grows).
- Bryum capillare* Hedw.
Widespread on walls, disused buildings, etc.
var. *torquescens* (B. & S.) Husn.
No further record.
- Bryum obconicu*m Hornsch.
No further record.
- Rhodobryum roseu*m (Hedw.) Limpr. (*Bryum roseu*m Schreb.).
No further record.

MNIACEAE

- Mnium hornu*m Hedw.
Same status, also in pasture fields.
- Mnium marginatu*m (With.) Brid. ex P. Beauv. (*M. serratu*m Schrad.).
The record for 1900, Tippet-holme, Hardcastle, J. Needham, proves to be *M. hornu*m, examined by B.B.S. Referee, and the High Lee Clough material doubtful, only a few stems available for examination.
High Greenwood, rock outcrop by riverside (1948); Hardcastle Crags, sandstone and lime outcrop (1949).
- Mnium stellare* Hedw.
Sun Wood. Near bottom part of wood are a number of loose stones, origin not known. These have a considerably lime content and bear a few calcicolous bryophytes, a small amount of this moss associated with untypical *Hyphnum*

molluscum. A small amount of Wood Aven in same locality (1948). Eaves Wood, Heptonstall, in a fair amount on an extension of the main sandstone and lime outcrop (1949).

Mnium cuspidatum Hedw.

Flora of Todmorden gives marshy pastures where lime has been supplied, Rough; Stansfield. Hardcastle Crag, Heptonstall side, above Gibson Mill, near outcrop where *Hypnum commutatum* grows; outcrop of sandstone and lime nearly opposite Cosy Corner; Eaves Wood, sandstone and lime outcrop (1948).

Mnium longirostrum Brid. (*M. rostratum* Schrad.).

Red Lane Dyke, Stainland; Jumble Hole Clough (1946); Ingham Clough; Colden Valley (1947). Probably well distributed in the cloughs.

Mnium affine Bland.

Halifax Golf Course, Ogden Moor, among grass in wet ground, Mrs. J. Appleyard (1953).

Mnium seligeri (Jur. ex Lindb.) Limpr. (*M. affine* Bland. var. *elatum* B. & S.).

In addition to the records given under *M. affine* Bland., which Crossland considered to be the var. *elatum* B. & S. = *M. seligeri*, there are the two following: 1905, Hebden Bridge, Moss Exchange Report; specimens from Nowell's collection from a bog on the left side of the river, Widdop Clough, 1861, have been verified (1951) by J. B. Duncan.

Mnium undulatum Hedw.

Well distributed, also marshy places in fields and rill sides.

Mnium punctatum Hedw.

Well distributed.

Mnium pseudopunctatum B. & S. (*M. subglobosum* B. & S.).

The B.B.S. Census Catalogue, 1926, gives some 70 vice-county records.

In some quantity, marshy field near Cragg Vale Within Reservoir, where Sundew grows (1948).

AULACOMNIACEAE

Aulacomnium palustre (Hedw.) Schwaegr.

Additional records are Cragg Vale, Sundew Field near Withins Reservoir; Gorple Moor, F. Murgatroyd (1948).

The var. *polycephalum* Hubn. recorded in the *Flora* for High Lee Clough is a gemmiferous form.

Aulacomnium androgynum (Hedw.) Schwaegr.

Hardcastle, on fallen tree; Beaumont Clough, on fallen tree (1947); Midgley Moor edge, Luddenden Dean, Marsh (1951); Skirden Clough, Ogden, wet ground.

MEESIACEAE

Amblyodon dealbatus (Hedw.) P. Beauv.

No further record.

BARTRAMIACEAE

Bartramia pomiformis Hedw.

Hardcastle Crag, outcrop above Gibson Mill, Wadsworth side of river (1949). If this moss has been frequent, it is not so at present.

Philonotis fontana (Hedw.) Brid.

Very plentiful and well distributed. The var. *ampliretis* Dixon recorded 1900 as a new British record was later considered to be only an attenuated form and is not included as a variety in the B.B.S. 1950 list.

Philonotis caespitosa Wils. ex Milde.

Catty Well Clough, Saltonstall, Mrs. J. Appleyard, *certe* B.B.S. Referee (1950); Ovenden Moor, Golf Course, wet ground, Mrs. J. Appleyard (1953).

Philonotis calcarea (B. & S.) Schp.

No further record. As the specific name implies, this is a limestone moss.

Breutelia chrysocoma (Dicks.) Lindb. (*B. arcuata* (Dicks.) Schp.).

No further record.

PTYCHOMITRIACEAE

Ptychomitrium polyphyllum (Sw.) Furnr.

Crimsworth Dean, wall, bottom of Shackleton Hill (1948); Hardcastle Crag, Ram Folly, wall, and Gibson Wood, wall (1947).

ORTHOTRICHACEAE

Amphidium mougeotii (B. & S.) Schp. (*Zygodon mougeotii* (Brid.) B. & S.)

Cragg Vale, wet rocks, brookside above Church (1947); Triangle, wet rocks by riverside (1948); Hardcastle Crag, plentiful on rock outcrop, Wadsworth side of river above Gibson Mill (1949); Catty Clough, on stream side rocks.

Zygodon viridissimus (Dicks.) R.Br.

1949. The sub-species, *Z. stirtoni* Schp., was collected from the sand and limestone outcrop in Eaves Wood, Heptonstall, and verified by Dr. W. Watson, B.B.S. Referee, and published among new vice-county records in B.B.S. Transactions 1950. In the B.B.S. 1950 list it does not appear either as a sub-species or as a variety.

Orthotrichum striatum Hedw. (*O. leiocarpum* B. & S.).

No further record.

Orthotrichum anomalum Hedw.

1840. High Greenwood, S. Gibson, Baines *Flora*, as var. *saxatile*. See U. Hutchinsiae, 1904, *Halifax Flora*.

1946. Sandstone and lime outcrop above Gibson Mill, Hardcastle, in very small amount, verified by Dr. W. Watson, B.B.S. Referee, who was uncertain as to type or var. *saxatile*.

Orthotrichum affine Brid. (*O. affine* Schrad.).

In the *Flora of Todmorden* it is stated of the genus *Orthotrichum* that no fewer than five species were formerly met with in the district; these have all disappeared. This probably included *Ulota* spp.

Ulota ludwigii (Brid.) Brid.

No further record.

Ulota crispa (Hedw.) Brid.

No further record.

Ulota drummondii (Hook. & Grev.) Brid.

No further record. A commentary on this species is given in the 1904 *Flora*.

FONTINALACEAE

Fontinalis antipyretica Hedw.

Plentiful, in the canal, well troughs, streams, etc. Not often found fruiting.

Fontinalis squamosa Hedw.

No change in status.

CLIMACIACEAE

Climacium dendroides (Hedw.) Web. & Mohr.

No further record. The Hardcastle specimens proved (1950) to be *Porotrichum alopecurum* and there is no packet in C. Crossland's herbarium from Crimsworth Dean.

HEDWIGIACEAE

Hedwigia ciliata (Hedw.) P. Beauv.

No further record.

CRYPHAEACEAE

Cryphaea heteromalla (Hedw.) Mohr.

No further record.

LEUCODONTACEAE

Leucodon sciurioides (Hedw.) Schwaegr.

No further record.

Antitrichia curtipendula (Hedw.) Brid.

No further record.

NECKERACEAE

Neckera crispa Hedw.

Still (1950) on the gritstone and lime outcrop at Eaves Wood and Hardcastle; High Greenwood, cliff by river. Although present as above the specimens are rather depauperate. A limestone moss.

Neckera complanata (Hedw.) Huben.

This is also present, along with the previous species, in Eaves Wood and Hardcastle. It is difficult to believe that this was ever frequent as marked on

Leyland's packet and also its frequency in High Greenwood. Nowell did not record it and there are no records in the *Flora of Todmorden*.

Homalia trichomanoides (Hedw.) B. & S.

No further record.

Thamnum alopecurum (Hedw.) B. & S. (*Porotrichum alopecurum* (L.) Mitt.).

Flora of Todmorden gives Stanely and Staups Cloughs. Hardcastle, in a few places at the base of small waterfalls; Nut Clough, Hebden Bridge.

HOOKERIACEAE

Hookeria lucens (Hedw.) Sm. (*Pterygophyllum lucens* (L.) Brid.).

White Lee or Foster Clough, Mytholmroyd (1947).

LESKEACEAE

Pseudoleskea catenulata (Web. & Mohr.) B. & S.

A record by Leyland proved to be *Heterocladium heteropterum*. It is also recorded in Baines' *Flora* for wet rocks, Stansfield Moor, but this is a doubtful record, as the usual habitat for this species is calcareous rocks on mountains. It is not recorded for V.C. 63.

THUIDIACEAE

Heterocladium heteropterum (Bruch) B. & S.

Shelf Wood, near waterfall; Luddenden Dean, riverside; Luddenden, well near Shepherd House; Langfield Edge, stream (1946); Colden Valley, wet rocks by stream; Ingham Clough, stones by stream (1947).

Anomodon viticulosus (Hedw.) Hook. & Tayl.

Bolton's record must be considered very doubtful. Records for V.C. 63 are few, and it favours calcareous habitats.

Thuidium tamariscinum (Hedw.) B. & S.

Flora of Todmorden says on banks in woods, but not so common as formerly.

Marshy area above Lumb Fall, Crimsworth Dean (1948); in an old quarry by roadside, near Lady Royd (1950). In both these places in very small amount and appears to be a declining species in this area, if ever abundant.

HYPNACEAE

Cratoneuron filicinum (Hedw.) Roth. (*Amblystegium filicinum* (L.) De Not.).

Sun Wood, Shelf, the marshy area with *C. commutatum* and Rough Horsetail (calcareous); also a marsh area near the bottom of the wood; Strines Clough, Colden Valley; Hardcastle Crag (1946).

Cratoneuron commutatum (Hedw.) Roth. (*Hypnum commutatum* Hedw.).

This species is an indicator of basic water and is present only in calcareous water flushes and rocks where such water emerges, as in the cloughs. Consequently it has a peculiar distribution in this area, sometimes present in just one position in a clough, wood or marshy area. The following is a full list of the localities in which I have seen it. All the principal cloughs have been investigated.

Red-water Clough, parish boundary stream, Cornholme, on rock outcrop at bottom; Lumb Butts near Todmorden, rock outcrop near village, near a path; Colden Clough, cliff outcrop by stream; Hardcastle Crag, rock outcrop above Gibson Mill, both sides of river; Crimsworth Dean, near Weet Ing bridge and many places in the ravine below Lumb Fall. In one place a tufa forms. Marsh area above Lumb Fall, etc.; Cragg Vale, in a few places above Church by the brookside, on rock outcrop; Luddenden Clough, rock outcrop above path from Halifax Lane to Riding Head; Luddenden Dean, Iris marsh near river; Turner Wood, Rishworth, marsh area; Triangle, rock outcrop by riverside near village; Ogden Kirk, calcareous tufa site near bridge; Shibden Head, rock outcrop in the Clough leading to Queensbury; Stainland, Red Lane Dyke, boundary stream of parish, on rock outcrop; Shelf, Sun Wood, calcareous flush where Rough Horsetail grows.

var. *falcatum* (Brid.) Moenk. (*Hypnum falcatum* Brid.).

The record for North Dean Wood is doubtful. There is no packet in C. Crossland's Herbarium.

Campylium stellatum (Hedw.) Lange & C. Jens. (*Hypnum stellatum* Schreb.).

Cragg Vale, Sundew Marsh near Withins Reservoir; Colden Valley, marsh at base of cliff by stream side; Crimsworth Dean, marsh above Lumb Fall (1946).

Leptodictyum riparium (Hedw.) Warnst. (*Hypnum riparium* L.).

No further record.

Amblystegium serpens (Hedw.) B. & S.

No further record.

Amblystegium juratzkanum Schp. (*A. juratzkae* Schp.).

Hardcastle Crag, c.fr., 1950, teste J. B. Duncan; Elland, Ainley Wood, 1952.

Drepanocladus fluitans (Hedw.) Warnst. (*Hypnum fluitans* L.).

This species is widely distributed in the parish and numerous forms have been recorded, named by the specialist, J. A. Wheldon. Those interested should refer to the 1904 *Halifax Flora*. The only variety included in the B.B.S. 1950 list is the var. *falcatus* (B. & S.) Warnst., which appears in the *Flora* under var. *falcatum* Schp.

Drepanocladus exannulatum (B. & S. Warnst.) (*Hypnum fluitans* L. Group *exannulatum* Ren.).

Marsh area by stream, upper Colden Valley, 1949.

Drepanocladus revolvens (Sm.) Warnst. (*Hypnum revolvens* Sw.).

Flora of Todmorden gives Widdop. Cragg Vale, Sundew field near Withins Reservoir; Crimsworth Dean, marsh above Lumb Fall (1949).

Drepanocladus uncinatus (Hedw.) Warnst. (*Hypnum uncinatum* Hedw.).

The varieties or forms recorded in the *Flora* of 1904 are not included in the B.B.S. 1950 list. Hardcastle Crag, wall near Gibson Cottages; unused overflow, Gibson Dam, Heptonstall side (1950).

Hygrohypnum ochraceum (Turn. ex. Wils) Loeske (*Hypnum ochraceum* Turn.).

The var. *flaccidum* Milde—common in this district—is not included in the B.B.S. 1950 list.

Hygrohypnum luridum (Hedw.) Jennings (*Hypnum palustre* L.).

No further record. The var. *tenellum* Schp. of the *Flora* is not included in the B.B.S. 1950 list.

Scorpidium scorpioides (Hedw.) Limpr. (*Hypnum scorpioides* L.).

No further record.

Acrocladium stramineum (Brid.) Richards & Wallace (*Hypnum stramineum* Dicks.).

Still often met with.

Acrocladium cordifolium (Hedw.) Richards & Wallace (*Hypnum cordifolium* (Hedw.).

Pond, Stearine Works, Norland (1948).

Acrocladium cuspidatum (Hedw.) Lindb. (*Hypnum cuspidatum* L.).

Still plentiful and well distributed.

Isoetecium myurum (Brid.) Brid.

No further record.

Isoetecium myosuroides Brid. (*Eurhynchium myosuroides* (L.) Schp.).

No further record.

Camptothecium sericeum (Hedw.) Kindb. (*Pleuropus sericeus* (L.) Dixon).

Eaves Wood, Heptonstall, grit and lime outcrop; Hardcastle Crag, grit and lime outcrop above Gibson Mill (1947).

Brachythecium albicans (Hedw.) B. & S.

No further record.

Brachythecium glareosum (Bruch) B. & S.

Flora of Todmorden gives moist banks, Harley Wood. No further record.

Brachythecium salebrosum (Web. & Mohr) B. & S.

Recorded in the 1904 *Flora* was determined by J. B. Duncan, B.B.S. Referee, as *Eurhynchium rusciforme*. H.W.

Brachythecium rutabulum (Hedw.) B. & S.

Still plentiful.

Brachythecium rivulare (Bruch) B. & S.

Widely distributed as stated in the *Flora*. The var. *cataracterum* Gautier of the *Flora* is not included in the 1950 B.B.S. list.

Brachythecium velutinum (Hedw.) B. & S.

No further record.

Brachythecium populeum (Hedw.) B. & S.

Many records. Prominent on Pecket Wood wall, Midge-hole Road (1950).

Brachythecium plumosum (Hedw.) B. & S.

No further record.

Eurhynchium striatum (Hedw.) Schp. emend. Stormer.

There is no specimen in C. Crossland's Herbarium. Recorded for Hardcastle by J. Needham in 1900.

Eurhynchium praelongum (Hedw.) Hobk.

Also in damp pastures.

Eurhynchium swartzii (Turn.) Curn.

Colden Clough, high cliff by stream side (1949).

Cirriphyllum piliferum (Hedw.) Grout.

Recorded in the *Flora of Todmorden* for Hebden Valley as *Hypnum piliferum*.

Eurhynchium riparioides (Hedw.) Jennings (*E. rusciforme* (Neck.) Milde).

Many stations given in the *Flora*, indicating its general distribution. The var. *atlanticum* Brid. of the *Flora* is not included in the B.B.S. 1950 list.

Eurhynchium murale (Hedw.) Milde.

Midge-hole Road (1949).

Eurhynchium confertum (Dicks.) Milde.

No change in status.

Rhynchostegiella pallidirostra (A. Br.) Loeske (*Eurhynchium pumilum* (Wils.) Schp.).

Shelf Wood, Mrs. J. Appleyard, 1950, *certe* B.B.S.

Rhynchostegiella tenella (Dicks.) Limpr. (*Eurhynchium tenellum* (Dicks.) Milde).

Eaves Wood, Heptonstall, on grit and lime outcrop, in poor condition. *Certe* J. B. Duncan, B.B.S. Referee.

Orthothecium intricatum (Hartm.) B. & S.

No further record.

Pseudoscleropodium purum (Hedw.) Fleisch. (*Brachythecium purum* (L.) Dixon).

No further record. A calcicolous species.

Pleurozium schreberi (Brid.) Mitt. (*Hypnum schreberi* Willd.).

No further record.

Isopterygium depressum (Bruch) Mitt. (*Plagiothecium depressum* (Bruch) Dixon).

The Hough Stone, Stansfield, record of the 1904 *Flora* is repeated in the *Flora of Todmorden*, very rare. No further record.

Isopterygium pulchellum (Hedw.) Jaeg. & Sauerb. (*Plagiothecium pulchellum* (Dicks.) B. & S.).

No further record.

Isopterygium elegans (Hook.) Lindb. (*Plagiothecium Borrerianum* Spruce).

Generally distributed (1950).

Isopterygium seligeri (Brid.) Dix. (*Plagiothecium silesiacum* B. & S.).

There is no specimen of this in C. Crossland's Herbarium. A doubtful record. There is no other record for V.C. 63 and the habitat is given as decaying trees.

H.W.

Plagiothecium latebricola (Wils.) B. & S.

No further record.

Plagiothecium denticulatum (Hedw.) B. & S.

Status unchanged.

var. *majus* (Boul.) Limpr.

Lumb Fall, Crimsworth Dean, 'a golden yellow form of this variety', W. Ingham (1904).

Plagiothecium silvaticum (Brid.) B. & S.

Status unchanged. Hardcastle Crag, C. A. Cheetham (1906).

var. *succulentum* (Wils.) Husn.

No further record.

Plagiothecium undulatum (Hedw.) B. & S.

Luddenden Dean, near Arrow Butt Farm; Hardcastle Crag and High Greenwood in many places (1946); Crimsworth Dean, between Middle Dean and Weet Ing (1948).

Hypnum cupressiforme Hedw.

No change in status.

var. *resupinatum* (Wils.) Schp.

Hardcastle Crag; Midge-hole Road (1946).

var. *ericetorum* B. & S.

Hardcastle Crag (1949).

var. *tectorum* Brid.

No further record.

Hypnum patientiae Lindb.

No further record.

Ctenidium molluscum (Hedw.) Mitt. (*Hypnum molluscum* Hedw.).

Sun Wood, on loose stones with lime content (1949); Crimsworth Dean, basic flush above Lumb Fall (1952). This moss is associated with limestone districts, and Leyland's 'frequent' can hardly be correct. Needham's packets are from 'above Lumb Waterfall'.

Hyocomium flagellare B. & S.

Status unchanged.

Rhytidiadelphus triquetrus (Hedw.) Warnst. (*Hylocomium triquetrum* (L.) B. & S.).

The *Flora of Todmorden* states, banks in woods but not so common as formerly. The Todmorden records are the only ones for V.C. 63.

Rhytidiadelphus squarrosus (Hedw.) Warnst. (*Hylocomium squarrosus* (L.) B. & S.).

Alcouden Valley (1947); Hardcastle, wall by Gibson Wood cottages, in small amount (1950).

Rhytidiadelphus loreus (Hedw.) Warnst. (*Hylocomium loreum* (L.) B. & S.).

Flora of Todmorden says, less frequent than formerly. The only records for V.C. 63 are Huddersfield, Hebden Bridge and Todmorden. Leyland's 'frequent' can hardly be correct.

Hylocomium brevirostre (P. Beauv.) B. & S.

No other record for V.C. 63.

Hylocomium splendens (Hedw.) B. & S.

No other record for V.C. 63. The records indicate that this group is disappearing from the parish. H.W.

Hepaticae

INTRODUCTION

THE classification followed by Mr. Crossland has been superseded by the publication of *The Students' Handbook of British Hepatics*, 2nd Edition 1926, by S. M. Macvicar. The following list is the arrangement in the British Bryological Society's Census Catalogue, 1930, and the Hepatics of Yorkshire in Transactions Y.N.U., 1946. The present name is given first, followed by the name in the 1904 *Flora* in brackets. Mr. Crossland made a few additions since 1904 and these are included in his copy of the *Flora* in the Halifax Reference Library. As with the mosses, this section received no further investigation by resident botanists until 1945. Contributions of interest were made by the visit of W. H. Pearson to Hardcastle in *Hepatics of the Hebden Valley* in *The Naturalist*, 1918, and the visit of the Y.N.U. in 1904. Some local hepatics are only found in less acid conditions than usually found in this district and the reference to this in the moss section also applies here. While *Pellia epiphylla* is generally distributed on acid soils, *P. fabbroniana* is the one always associated with *Cratoneuron commutatum* and its presence anywhere is an indication of less acid conditions. As in the mosses the realisation of situations with a lime content led to finds of interest. An outstanding example was the re-recording of *Madotheca platyphylla* in 1946, first recorded as *Porella platyphylla* by Bolton in 1775. This occurs on the Eaves Wood outcrop, its only known station. Some records of hepatics are included in a pamphlet published in Hebden Bridge, *On an History of the Typhus at Heptonstall*, 1844. This pamphlet included two contributions from S. Gibson on the Geology and Botany of Heptonstall. In the geological portion mention is made of the grit and lime outcrop in Eaves Wood with the names of the plants growing there. From High Greenwood two rare hepatics are given, *Anthoceros punctatus* and *Blasia pusilla*. The former was recorded by Ray in 1724, in a lane at Greenwood Lee, and the latter by Bolton in 1775 for Norland with a few other records to 1845. *Targionia hypophylla*, Colden Valley, Lumb Falls near Lumb Mill is also mentioned.

S. Gibson made many records in the County *Floras* and why these rarities were not included is a mystery. I mention them here as of interest, but because of their unofficial nature do not include them in the following list. The pamphlet mentioned above should be of interest to local botanists and can be seen at the Halifax Reference Library.

HEPATICS OF HALIFAX PARISH

Revised from *The Flora of Halifax*, C. Crossland, 1904, with additions. The names and numbers extracted from the *Students' Handbook of British Hepatics*, S. M. Macvicar, 2nd Edition, 1926. Halifax *Flora* names in brackets.

10. *Riccia sorocarpa* Bisch. (*R. glauca* L.)

Recorded by Bolton as *R. minima*, a synonym of *R. sorocarpa*. The record as *R. glauca* would appear to be an error. 1946. Midgley, field at the top of Brearley Wood. See *Nat.*, 1947, 58.

15. *Ricciocarpus natans* (L.) Corda

No further record.

18. *Conocephalum conicum* (L.) Dum.

Distribution as stated in *Flora*. No record of this in fruit but occasionally male receptacles are seen. H.W.

19. *Lunularia cruciata* (L.) Dum.

Gardens and vicinity of gardens (1904). Not confined to these positions. An introduction, no records of fruiting. Evidently increased since 1904. Not recorded for Midge-hole Road in *Flora* of Pecket Wood, *Nat.*, 1904, now (1948) plentiful on wall bases and walls; Rishworth, lane leading to Wheelwright's Mill; roadside and wall, Woodlands; Booth; Pecket Road; and many other stations.

22. *Marchantia polymorpha* L.

Records are still numerous, frequently at the base of walls and mill ruins. Also occurs as an aquatic, submerged in streams, as in Beaumont Clough, Hebden Bridge. Very plentiful (1946) by roadside from Colden to Edge Hey Green. On Midge-hole Road it has almost gone, being replaced by *Lunularia*.

23. *Aneura pinguis* (L.) Dum.

Cragg Vale, Sundew field near Withins Reservoir, also on wall by roadside (1943); Cragg Vale, calcicolous site by stream side just below Moorland Cottages; Ogden Kirk, calcicolous site just below Bridge; Crimsworth Dean, ravine below Lumb Falls, in a few places, especially near the Fall, on both sides; in marsh area with Butterwort, Marsh Valerian and Bog Pimpernel, above Lumb Falls; on rock outcrop by stream side just below Weet Ing, Crimsworth; on rock outcrop above Grain Water Bridge; on rock outcrop by riverside above Walshaw (Romshaw) Bridge; on Tall Cliff, High Greenwood; Colden Valley, above village, in marsh area by stream side (above Clough Mill), (1945); Ovenden, railway cutting, wet rocks near bridge crossing Keighley Road (1946); Brookfoot Dye Works Tip, a very unusual site and confined to a small patch. When growing among mosses has a tendency to forma *angustior*.

25. *Aneura multifida* (L.) Dum.

The Mytholm Clough record of the *Flora* is probably an error for *A. sinuata*. In *The Flora of Todmorden*, 1911, J. Nowell and A. Stansfield, the Todmorden record is Green's Clough, not in the parish.

In the *Halifax Flora* records for this species have been confused with *A. sinuata*. See *Nat.*, 1945, 79. In C. Crossland's collection of Hepatics, Belle Vue Museum, four packets of *A. sinuata* are labelled *A. multifida* and the other records for which there are no packets must be considered doubtful. Ogden Kirk, just below bridge, calcicolous site; Cragg Vale, at base of rock outcrop near the stream just above Moorland Cottages; Cragg Vale, Sundew field near Withins Reservoir (1944); Eastwood, Stoodley Clough, on wet rocks with *Conocephalum*; Hardcastle Craggs, base of wet rocks approaching Fisherman's Hut; (1945); Cornholme, Red-water Clough (boundary stream) first branch above Pudsey, in a marsh area near stream (1948).

26. *Aneura sinuata* (Dicks.) Dum.

Recorded as *A. multifidum*, in *Jubula* stream, Hardcastle Craggs (1896). Hardcastle Craggs, C. A. Cheetham, 1907 (see 'Yorkshire Hepatics', *Y.N.U. Transactions*, 1946). Hardcastle Craggs, *Jubula* stream (see *Nat.*, 1945, 79); Luddenden, well, bottom of lane from Ive House to Shepherd House; Ive House Clough or Load Clough; Booth, Kiln House Clough, falls; Mytholmroyd, White Lee or Foster Clough, many places; Hill House Clough in Red Acre Wood; Hebden Bridge, stream in Pecket Wood, recorded as *A. multifida* in *Nat.*, 1904, and many other places in the Hebden Valley; Crimsworth Dean, bottom of stream opposite Weet Ing; Beaumont Clough; Eastwood, Parrock Clough, main stream and side stream; Shaw Clough and side stream; Naylor Lane Clough, Midgley to Luddenden Foot (1945); Coley, Sun Wood; Shibden Head, Clough leading to Queensbury; Blackburn Valley, short Clough, first past Dye Works, on wet rocks; Bottomley Clough; Southowram, rock hollow near Pasture House Farm, on wet rocks; Crimsworth Dean, in a flush above Lumb Falls (1952). Fairly plentiful in the parish, streams, waterfalls and wet rocks.

var. *major* (Lindb.) K. Muell.

Todmorden, Pennant Clough, two places, both damp soil (1945); Todmorden, on Y.N.U. Excursion, K. Mattinson, Bryological Report, *Nat.*, 1954, 29.

30. *Metzgeria furcata* (L.) Dum.

Needham's herbarium specimens have been examined and are considered to be the following species. C. Crossland gives *M. conjugata*, Hardcastle, 1898, in his copy of the *Halifax Flora*. Heptonstall, Eaves Wood, limestone outcrop, in small amount (1945 and 1951); Hardcastle Crag, in a rocky hollow between Rom Folly and Gibsons Mill (1948).

31. *Metzgeria conjugata* Lindb.

1896. Hardcastle Hill, J. Needham; 1902, High Greenwood, J. Needham. Both these recorded in *Flora* under *M. furcata*. Clough near Gibson Mill, Hardcastle Crag (1945).

36. *Moerckia flotowiana* (Nees) Schiffn.

Ogden Clough, calcareous tufa, near Kirk Bridge. The *Nat.*, 1945, 79.

38. *Pellia epiphylla* (L.) Corda

No change in status.

39. *Pellia neesiana* (Gottsche) Limpr.

Luddenden Clough; Southowram; Mytholmroyd; Luddenden Dean (1945). See *Nat.*, 1945, 150. Probably well distributed in the parish, but care is required to distinguish the characters of the perianth. This is best done in July or August before any erosion of the perianth occurs.

The following are suspected positions:

Wood Hey Clough, near the top, by stream; Cragg Vale, Broadhead Clough, Gentian field; Hebden Bridge, Beaumont Clough, marshy pastures near the top; Blackburn Valley, Red Lane Dyke, marshy pasture near bottom; Jumble Hole Clough, marsh by stream side; Ingham Clough, marsh by stream and pasture; Oak Hill or Wickenberry Clough, Todmorden; Pennant Clough, Todmorden; Sun Wood; Shelf portion, marsh nearly opposite old Nurseries.

Unlike *P. fabbronia* this is a plant of acid soils and will grow along with *P. epiphylla*.

40. *Pellia fabbronia* Raddi (*P. calycina* Tayl.).

Ogden Kirk, calcicolous site, just below bridge; Rishworth, wet rocks near bottom of Butts Clough; Hebden Bridge, Midge-hole Road, on the wall, Pecket Wood side, a peculiar small type, not seen in fruit, but the thallus has the characteristic method of branching in the autumn; Hardcastle Crag, calcicolous outcrop near footpath above Gibson Bridge; Walshaw or Romshaw Clough (1944); Crimsworth Dean, plentiful in ravine below Lumb Falls; Cragg Vale, calcicolous outcrop by stream side and other places between Victoria Mills and Moorland Cottages, near the stream; Luddenden Clough; Shelf Wood, *Equisetum hyemale* marsh and in other places; Booth, Dean House Wood; Eastwood, Stoodley, Ingham and Jumble Hole Cloughs; Red Lane Dyke, Blackburn Valley; Triangle, rock outcrop opposite cricket field; Cornholme, Red water Clough (1945); Heptonstall, Colden Valley; Elland, Ainley's stream side above Sharratts; Booth, Wade Wood, Iris marsh (1946).

Generally associated with *Cratoneuron commutatum* but will grow in slightly less alkaline situations than the moss. Some of the records are based on the characteristic branching of the thallus.

41. *Blasia pusilla* L.

No further records. See Gibson's record in introduction.

43. *Fossombronia pusilla* (L.) Dum.

Elland, Ainleys, region of Sharratts and near Ainley Wood (1944); Cragg Vale, Broadhead Clough, damp pastures near footpath; Eastwood, Stoodley Clough; *Ingham Clough; Millbank, Severils or Sage Clough, pasture near stream; Todmorden, Pennant Clough; *Blackburn Valley; Stainland, Harrow Clough, pasture; *Luddenden Dean, pasture; Mytholmroyd, Wood Hey Clough, pasture, also near the bottom in pasture, vicinity of ponds (1945); *Hebden Bridge; Crimsworth Dean above Lumb Falls; rough pasture above Pecket Wood; Sun Wood, lower portion; *Midgley, field adjoining top of Brearley Wood (1946); Luddenden Foot, bank below Hand Carr Wood.

Apparently widely distributed, particularly in rough damp pasture with a clay subsoil, where soil is bared by cattle, also near streams.

*Not in fruit, and could be the next species.

44. *Fossombronia wondrazeki* (Corda) Dum.
 Mytholmroyd, Wood Hey Clough. *Nat.*, 1946, 108. (1945); field above pond, bottom of Wood Hey Clough; Cragg Vale, clay field near bottom of Broadhead Clough; Elland, pathside near Ainley Wood (1946); Luddenden Foot, bank below Hand Carr Wood; Gorple, pathside near bottom reservoir (1949).
 Grows in similar situation to the previous species and can only be determined by examination of the spores.

65. *Marsupella emarginata* (Ehrh.) Dum.
 Hebden Valley, Hardcastle Craggs, on exposed stones in or by side of river; Alcomden, similar situations; Crimsworth Dean, stones in river; Booth, Luddenden Dean; Cornholme, Red Water Clough and side streams (1945).

71. *Alicularia compressa* (Hook.) Nees (*Nardia compressa* (Hook.) Gr. & B.).
 Upper part of River Ryburn, Blackstone Edge (1944); Saltonstall, Warley Moor, in a few streams; Hebden Bridge, Hardcastle Craggs, in many places; Crimsworth Dean; Cragg Vale, Broadhead Clough, in main stream, feeding streams and Cragg Brook (1945); Todmorden, Lumb Butts Clough; Midgeley Moor, stream (1946); Turner Clough, Rishworth (1947). Many other records. Not uncommon in or by streams from moors.

72. *Alicularia scalaris* (Schrad.) Corda (*Nardia scalaris* Schrad.).
 Hebden Bridge, Hardcastle Craggs, High Greenwood (1945); Mytholmroyd, Erringden Moor edge; Todmorden, Pennant Clough; Colden, Strines Clough; Lumb Butts Clough (1946); Gorple, near Reservoir (1948); Lighthazels (1949).

var. *rivularis* Lindb.

Rishworth Valley, Lees' *Flora*.

var. *procerior* Schiffn.

Eastwood, Jumble Hole Clough (1944); Ogden, Skirden Clough (1945).

73. *Alicularia geoscyphus* De Not. (*Nardia silvrettae* Gottsche).
 Hebden Valley, associated with *N. scalaris*, W. H. Pearson, *Nat.*, 1918; Hebden Valley, W. Ingham, *Nat.*, 1904; Hardcastle Craggs, H. C. Broome (1912); Ogden Moor and Kirk (1944); Midgley Moor edge, Crimsworth Dean (1944); Luddenden Dean; Hardcastle Craggs; Pennant Clough, Todmorden (1945); Cragg Vale, Broadhead Valley; Scammonden, near Dean Head Chapel; Barkisland, Bottomley Clough, in quantity; Blackstone Edge; Eastwood, Jumble Hole Clough (1946); High Greenwood; Rishworth, Booth Dean (1947); Cornholme, Red Water Clough (1948); Hebden Valley, field above High Greenwood, *forma suberecta* Lindb.; Gorple, *forma suberecta* Lindb. (1949); Elland, Ainley Wood area, open ground; Todmorden, Oak Hill Clough area, near top (1952). The type occurs, but mainly tends towards *forma suberecta*.

75. *Eucalyx obovatus* (Nees) Breidl. (*Nardia obovata* Nees).
 The Parrock Clough record, C.C., 1900, is not this species. H.W. Saltonstall, on wet rock near Catty Well; Crimsworth Dean, above Lumb Falls; Stoodley Clough, Eastwood (1945); Rishworth, Bogden Clough (1946); Saltonstall, Catty Well Clough, J. Appleyard (1955).

78. *Eucalyx hyalinus* (Lydell) Breidl. (*Nardia hyalina* Lyell).
 Some of the records in the 1904 *Flora* are errors, as determined by examination of herbarium material, and others doubtful in absence of fruit. The status 'frequent' and the habitat 'on rocks in running water and wet banks by stream sides' is very doubtful. The habitat for this species according to Macvicar is on moist soil and rocks. I have no records of it. H.W.

79. *Aplozia crenulata* (Sm.) Dum. (*Jungermania crenulata* Sm.).
 Hardcastle Craggs, J. Needham, 1912 (in C. Crossland's copy of the *Halifax Flora*, Belle Vue Reference Library); Saltonstall Moor; Luddenden Foot, canal path; Hebden Bridge, Crimsworth Dean, bottom of Shackleton Hill; Cragg Vale, road to Withins Reservoir; Hudson Clough near Todmorden; Ovenden, railway cutting (1946); Rishworth, moor near Pike Clough; Luddenden Dean; Hardcastle Craggs; Copley, canal path (1947); Greenwood Lee, lane to Hardcastle Craggs (1948).

var. *gracillima* (Sm.) Heeg.

Ogden Kirk (1944); Hebden Bridge, Hardcastle Craggs; Colden Valley; Luddenden Dean (1945); Colden, Strines Clough; High Greenwood; Cragg Vale, Broadhead Clough (1946); Sun Wood, near bottom, clay banks (1948).

80. *Aplozia caespiticia* (Lindenb.) Dum.
 See *Nat.*, 1947, 10. Lumb Butts, streamside, well above village; Crimsworth Dean, Clough above Lumb Falls; Eastwood, Jumble Hole Valley, roadside near the bottom;

Mytholmroyd, edge of Erringden Moor, near Daisy Bank Farm (1946); Ogden Kirk, near bridge; Hebden Valley, Blake Dean area; Crimsworth Dean, near the bottom; Stanely Clough, near Todmorden, top portion, in several places and in quantity; Langfield Moor, near Gaddens Reservoir; Luddenden Dean, bottom of wood near Arrow Butt Lea and Catharine House, side of path, small amount; Rishworth, roadside by moor after passing 'Commons'; Pike Clough sides, top portion and on the moor in the same vicinity. Very plentiful all about this area, 1947; top of Oak Hill Clough, Todmorden, clay bank by path.

Often on bared clay but not confined to this.

81. *Aplozia sphaerocarpa* (Hook.) Dum. (*Jungermania sphaerocarpa* Hooker). Hardcastle, W. Ingham, Y.N.U. Excursion, *Nat.*, 1904; Hebden Valley, W. H. Pearson, *Nat.*, 1918; Crimsworth Dean, *Nat.*, 1929; Mytholmroyd, Foster Clough, particularly in the upper moor portion; Luddenden Dean (1944); Crimsworth Dean; Hardcastle Crags; Cragg Brook; Catty Well Clough; Colden Clough; Beaumont Clough; Clough at Mixenden Ings; Maple Dean Clough; Cob Clough; Skirden Clough; Sage Clough; Red Lane Dyke; Pennant Clough; Nut Clough; Peckett Clough (1945); Noah Dale; Oak Hill Clough (1946). A very plentiful species on exposed rocks in and by streams. Fruits freely.

83. *Aplozia riparia* (Tayl.) Dum. (*Jungermania riparia* Tayl.). Ogden Kirk; Cragg Vale, on rocks by streamside in a few places (1944); Colden Clough; Hardcastle Crags, many places; Crimsworth Dean, on rocks by stream side, particularly in ravine below Lumb Falls; Sun Wood; Luddenden Clough; Luddenden Dean; Kiln House Clough; Shibden Head Clough.

Records numerous and often associated with *Cratoneuron commutatum*.

var. *rivularis* Bern.

Luddenden Clough, in water trickling down a rock face, with *Cratoneuron commutatum*.

85. *Aplozia pumila* (With.) Dum.

Foster Clough, Mytholmroyd; Colden Clough; Cragg Vale; Red Lane Dyke; Stoodley Clough; Hill House Clough, Red Acre Wood; Red Water Clough, Cornholme; Hardcastle Crags, in a few places; Crimsworth Dean; Beaumont Clough (1945); Barkisland, Bottomley Clough (1946); Eastwood, Ingham Clough (1947).

Probably well distributed in the cloughs, particularly in the west of the parish, on wet shales exposed by the stream sides.

87. *Aplozia lanceolata* (Schräd.) Dum. (*Liochlaena lanceolata* L.).

No further record.

92. *Gymnocolea inflata* (Huds.) Dum. (*Jungermania inflata* Huds.).

Status unchanged.

95. *Lophozia badensis* (Gottsche) Schiffn.

High Greenwood, calcareous cliff. *Nat.*, 1946, 52.

102. *Lophozia ventricosa* (Dicks.) Dum. (*Jungermania ventricosa* Dicks.).

Howden Hall, Crimsworth Dean, J. Needham (in C. Crossland's copy of the *Halifax Flora*), 1912. Hardcastle Crags; Cragg Vale; Ingham Clough; Brearley; Colden Valley; North Dean Wood; Red Water Clough; Shaw Clough; Luddenden Dean; Wood Hey Clough (1945); Strines Clough; Noah Dale; Midgley Moor (1947); Gorpel (1948).

Lophozia silvicola Buch (new to Britain 1949).

Hardcastle Crags, on rotting prostrate tree; first pasture above High Greenwood, a few places (1950). First Yorkshire records. As this species only differs from *L. ventricosa* by a microscopic difference in the oil bodies in the cells, it is unlikely that anyone will study its distribution in the parish. The above records are an indication of its occurrence. H.W.

107. *Lophozia bicrenata* (Schmid) Dum.

Hipperholme, Mrs. J. Appleyard, 1955. *Nat.*, 1956, 30.

108. *Lophozia excisa* (Dicks.) Dum. (*Jungermania capitata* Hook.).

No further record.

109. *Lophozia incisa* (Schräd.) Dum.

Gorpel Clough, *Flora of Todmorden*; A. Stansfield & J. Nowell (1911).

110. *Lophozia quinqueidentata* (Huds.) Cogn. (*Jungermania Lyoni* Taylor).

No further record. Not included in the *Flora of Todmorden*, Stansfield & Nowell, 1911.

113. *Lophozia floerkii* (Web. & Mohr) Schiffn. (*Jungermania lycopodioides* Wallr. var. *Floerkii* W. & M.).

Crimsworth Dean (1944); Cragg Vale; Mixenden Ings; Swill Hill; Hathershelf Scout; Beaumont Wood; Red Water Clough, Cornholme; Scammonden (1945); Noah Dale; Red Acre Wood, Mytholmroyd. Many more records, plentiful in Hardcastle Craggs and in the west of the parish. Very variable.

forma naumanniana Nees.

Hebden Bridge. Moss Exch. Club Rep. II. 83.

114. *Lophozia atlantica* (Kaal.) Schiffn.

Hebden Bridge, Hardcastle Craggs. *Nat.*, 1907, 151, and 1918, 124. Moss Exch. Rep. II. 83 and 196. W. Ingham's Herbarium. Jumble Hole Clough, Eastwood, 1946. *Nat.*, 1949. I have not seen its Hardcastle station. James Needham's record book, H.B.S.S., says: On grit rocks in plenty, 8th Feb., 1913, Old Syke Clough, Hebden Valley. First collected in the Hebden Valley on Y.N.U. meeting at Hebden Bridge in 1904 by W. Ingham, and again in 1912. *Nat.*, 1907, 151; on blocks of millstone grit.

115. *Lophozia attenuata* (Mart.) Dum. (*Jungermania gracilis* Schleich.). Crimsworth Dean; Hardcastle Craggs, in many places (1944).

116. *Lophozia barbata* (Schmid) Dum. (*Jungermania barbata* Schreb.).

Hardcastle Craggs, C. A. Cheetham, 1907, Y.N.U. Record Book, but not included in 'Hepatics of Yorkshire', 1946.

121. *Sphenolobus minutus* (Crantz) Steph. (*Jungermania minuta* Crantz). No further record.

127. *Sphenolobus exsectiformis* (Breidl.) Steph.

Hardcastle Craggs, 1912. Given in C. Crossland's copy of the *Halifax Flora*, in the Halifax Reference Library.

130. *Plagiochila asplenoides* (L.) Dum.

Hardcastle Craggs; Heptonstall, Eaves Wood (1944). Both recorded on calcareous sandstone; Crimsworth Dean, ravine below Lumb Falls; Paddock Beck, above Grain Water Bridge (1945); Sun Wood, lower part (1946). My experience is that this species is only found in situations less acid than usual for this district. In all the gatherings leaf dentation slight.

131. *Plagiochila spinulosa* (Dicks.) Dum.

No further record. The Gorpely Clough of the *Flora* is in Lancashire. H.W.

137. *Leptoscyphus taylori* (Hook.) Mitt. (*Mylia Taylori* (Hook.) Gr. & Benn.). *Flora of Todmorden* gives Stansfield Moor. High Greenwood, two positions (1946).

138. *Leptoscyphus anomalus* (Hook.) Mitt. (*Mylia anomala* (Hook.) Gr. & B.). Skirden Clough; Ogden (1945).

140. *Lophocolea bidentata* (L.) Dum.

Frequent and widespread in the parish.

141. *Lophocolea cuspidata* Limpr.

Pecket Wood, 'Flora of Pecket Wood', *Nat.*, 1904. Pecket Wood, on wall, Pecket Road (1946); Hardcastle Craggs, between Rom Folly and Mill, plentiful in a rocky hollow. It is to be noted that the Editor of *The Hepatics of Yorkshire*, C. A. Cheetham, and the Compiler, F. E. Milsom, *Transactions*, Y.N.U. 1946, did not consult the *Flora of Halifax* when compiling their list, and the first record for the parish in that list is for 1904 by W. H. Burrell, *Nat.*, 1904, 172.

143. *Lophocolea heterophylla* (Schrad.) Dum.

Sun Wood; Crimsworth Dean (1944); Load Clough, Luddenden; Park Wood, Elland; Norland Clough; Nut Clough, Hebden Bridge; Pennant Clough, Todmorden; Colden Clough (1945).

145. *Chiloscyphus polyanthus* (L.) Corda

Generally present in all the Cloughs and streams, also in bogs and marshland. Situations too numerous to mention but no attempt has been made to differentiate the varieties from the typical form of the species.

var. *rivularis* (Schrad.) Nees.

A form near to this in running water, Hardcastle, J.N., 1901. Letter to Crossland from H. C. Broome, January, 1915: '*Chiloscyphus polyanthus* var. *fragilis* is from the streamlet at Hardcastle where *Jubula hutchinsiae* is found. It is the plant referred to in your *Halifax Flora* as being nearer the var. *rivularis* than the type. Mr. Watson informs me he has submitted it to Mr. Ingham who refers it to the var. *fragilis* (Roth) K. Mull.'

var. *fragilis* (Roth) K. Mull.

J. Needham's record book, Hebden Bridge Scientific Society, gives: near Howden Hall, Hebden Valley. Collected on a visit to Hardcastle Craggs by D. A. Jones, H. C. Broome, W. Watson (based on vegetative features).

150. *Saccogyna viticulosa* (Sm.) Dum.

Hardcastle Craggs, W. Ingham, *Nat.*, 1904; Hardcastle, on rocks between Hardcastle Hill and Gibsons Mill, fairly plentiful; Catty Well Clough, Wainstalls, Mrs. J. Appleyard (1950).

151. *Cephalozia bicuspidata* (L.) Dum.

One of the commonest leafy hepatics in the parish and widely distributed. This refers to the aggregate together with the following, as I have made no attempt to distinguish them.

var. *lammersiana* (Hub.) Breidl. (*C. Lammersiana* (Hubn.) Spruce).

No further record.

forma *conferta* Huben.

Staups Moor (1944); Luddenden Clough; Cragg Vale (1945); Heptonstall, Greenwood Lea road to Hardcastle Craggs (1948).

156. *Cephalozia connivens* (Dicks.) Lindb.

Wainstalls and Warley Moor (1944); Cragg Vale, wood near church; marshy field approaching Withins Reservoir, where Sundew grows; Norland Moor, Sundew marsh; Crimsworth Dean, above Lumb Falls and Grain Water Bridge; Erringden Moor, near top of Broadhead Clough, and near Stoodley Pike (1945); Skirden Clough, Ogden; Hebden Valley, pasture field past High Greenwood; Stansfield Moor; Midgley Moor, near Old Town; Passett Bog, marshy field near Bridestones, very plentiful; Upper Ryburn Valley, above Baitings Bridge (1946); Beaumont Clough (1947).

The absence of records in the 1904 *Flora* is remarkable as this species is not uncommon and in large patches where it does occur.

158. *Cephalozia media* Lindb.

First pasture above High Greenwood, Heptonstall (first record V.C. 63) (1949); Hardcastle Craggs, in woodland, past Howden Hall, above road (1951).

159. *Cephalozia catenulata* Hubn.

No further record.

164. *Nowellia curvifolia* (Dicks.) Mitt. (*Cephalozia curvifolia* (Dicks.) Dum.).

Hardcastle Craggs, prostrate dead tree near river, above Gibson Mull (1945).

165. *Cephaloziella starkii* (Funck) Schiffn. (*Cephalozia divaricata* (Smith) Dum.).

Luddenden Clough; Hebden Bridge; Siddal, canal side; Millbank and Sage Clough; Copley; Todmorden, Pennant Clough (1945); Rastrick; Erringden Moor; Northowram; Crimsworth Dean; Stansfield Moor; Jumble Hole Clough; Elland, Ainley fields (1946); Todmorden, Langfield Moor; Midgley Moor, near Reservoirs; Triangle (1947).

Not uncommon in the parish. All records based upon vegetative features, gemmae common.

170. *Cephaloziella rubella* Warnst.

Sun Wood, Shelf, bare ground at edge of field, Mrs. J. Appleyard (1953).

180. *Odontochisma sphagni* (Dicks.) Dum. (*Cephalozia Sphagni* (Dicks.) Spruce).

No further record. As *Sphagna* are plentiful in the parish, the rarity of this hepatic is remarkable. Despite frequent search I have not seen it, neither did Crossland or Needham.

185. *Calypogeia trichomanis* (L.) Corda (*Kantia trichomanis* (L.) Gr. & B.).

One of our most plentiful hepatics, on banks, moorland and woodland.

186. *Calypogeia neesiana* (Carest. & Massal.) K. Mull.

Widdop, near Hebden Bridge, A. Thompson, B.B.S. Report III, 340 (1937); Hardcastle Craggs, G. A. Shaw (1948), *Nat.*, 1949.

187. *Calypogeia fissa* (L.) Raddi (*Kantia Sprengelii* Mart.).

Erringden, near Stoodley Pike, C. Crossland, 1902, *certe* S. M. Macvicar; Broadhead, Erringden, C. Crossland, 1906; Langfield Common; Sun Wood, Shelf, 1946; Ingham Clough, 1947.

191. *Calypogeia arguta* Nees & Mont. (*Kantia arguta* Lindb.).

Brearily Wood (1946); Hebden Bridge, *Nat.*, 1904, 172; Crimsworth Dean, Y.N.U. visit, *Nat.*, 1929; Catty Well Clough, Wainstall, Mrs. J. Appleyard; Sun Wood, Shelf (1950); Hardcastle Craggs, base of Hardcastle Hill Cliff at riverside and a few

other places where frosts and thaws have bared the soil; Greenwood Lea Clough, above Colne Road (1951).

192. *Bazzania trilobata* (L.) Gray
No further record.

197. *Lepidozia reptans* (L.) Dum.
Records too numerous to give in detail.

var. *julacea* Nees Beaumont Clough (1947); Hardcastle Crag (1948).

200. *Lepidozia setacea* (Web.) Mitt.

Hardcastle Crag, H. C. Broome, *teste* W. H. Pearson (1912). No further record.

199/200. (*Lepidozia trichoclados* K. Mull. (*Lepidozia setacea* (Web.) Mitt)).

In the absence of fruit these are difficult to distinguish, and the following records refer to the aggregate:

Hardcastle Crag, Heptonstall side; also top of short clough first above Gibson Mill; also by *Jubula* stream; Erringden Moor, near top of Broadhead; Skirden Clough, Ogden (1946); Horsehold Rock outcrop, Hebden Bridge; Ogden Kirk (1947); Hardcastle Crag, in the wooded part of the Heptonstall side just past and above Howden Hall (1951).

201. *Blepharostoma trichophylla* (L.) Dum.

Hardcastle Crag, rocks on Crag side of river; Norland Clough, rock outcrop at bottom (1945); Ryburn Valley, rocks by riverside, near Little Haven Farm; Sun Wood, Shelf, rock outcrop (1946); Parrock Clough, or lower part of Broadhead Clough, Mytholmroyd, on rock near stream (1952). *Flora of Todmorden* gives Robin Wood; Stansfield Moor.

207. *Ptilidium ciliare* (L.) Hampe (*Blepharozia ciliaris* (L.) Dum.).
No further record.

209. *Trichocolea tomentella* (Ehrh.) Dum.

Turner Clough, F. Murgatroyd (1945); Wade Wood, Booth, Irish Marsh, scarce (1946).

210. *Diplophyllum albicans* (L.) Dum.

Plentiful in woods and Cloughs, and occasionally in pasture fields.

218. *Scapania gracilis* (Lindb.) Kaal. (*S. resupinata* (L.) Dum.).

1912. Hebden Bridge, collected by H. C. Broome and named by him as a depauperate form.

221. *Scapania nemorosa* (L.) Dum.

Hardcastle Crag, rocks near river path, above Gibson Mill (1944).

224. *Scapania dentata* Dum. (*S. purpurascens* Pears., *S. purpurea* (Hook.) Tayl.).
Hardcastle Crag, W. H. Pearson, *Nat.*, 1918. In 1904 Wm. Ingham recorded *S. subalpina* as common in Hardcastle Crag. The note in *The Naturalist* describes a visit by W. H. Pearson who recorded *S. purpurascens* as the plant probably referred to by W. Ingham.

Reaps Water Valley, packet in C. Crossland's collection, Belle Vue Museum; Crimsworth Dean, Y.N.U. visit, *Nat.*, 1929; Ogden Kirk, a green form; upper Ryburn Valley, above Baitings, purple form; Ovenden, railway cutting, near Club Bowling Green (purple) (1944); Oak Hill Clough, Todmorden, purple (1952).

225. *Scapania intermedia* (Husnot) Pears.

Hardcastle Crag, H. C. Broome, 1912. Collected on a visit with J. Needham. Only a few stems are present in C. Crossland's collection at Belle Vue Museum, not sufficient to have a record of a species rare in V.C. 63. H.W.

226. *Scapania undulata* (L.) Dum.

Situations too numerous to give in detail.

230. *Scapania irrigua* (Nees) Dum.

Heptonstall, damp bank, Greenwood Lea entrance to Hardcastle Crag (1948).

231. *Scapania curta* (Mart.) Dum.

Hardcastle Crag, H. C. Broome (1912); Hebden Valley, W. H. Pearson, *Nat.*, 1918; Ogden Clough (1944); Beaumont Clough; Hathershelf Scout, Mytholmroyd (1945); Crimsworth Dean, roadside and rough field near Hollins Reservoir (1946); Hardcastle Crag, near Gibson Mill dam; Heptonstall, Greenwood Lea entrance to Hardcastle Crag (1948); Luddenden Foot, pasture fields about Hand Carr Wood (1949).

233. *Scapania umbrosa* (Schrad.) Dum.

Hardcastle Crag, H. C. Broome (1921); Hardcastle Crag, W. H. Pearson, *Nat.*, 1918; Hardcastle Crag, a few places (1944).

234. *Radula complanata* (L.) Dum.

Flora of Todmorden gives Pennant Clough.

243. *Madotheca platyphylla* (L.) Dum. (*Porella platyphylla* (L.) Lindb.). Heptonstall, Eaves Wood, outcrop of sandstone with lime content (1946).
 253. *Lejeunea cavifolia* (Ehrh.) Lindb. (*L. serpyllifolia* (Dicks.) Lib.). *Flora of Todmorden* gives Hudson Clough, Hardcastle Crag, Mrs. J. Appleyard (1948). (A rather depauperate form, H.W.)
 261. *Jubula hutchinsiae* (Hook.) Dum. Still plentiful (1946) in the position stated in the *Flora*, near the path soon after passing Cosy Corner stepping stones, H.W.; Hardcastle, small waterfall near the flat ground with large Beech tree approaching Fisherman's Hut, base of streamlet flowing down hillside. (In both positions the postical lobe is not typical of the species.)
 264. *Frullania tamarisci* (L.) Dum. Hebden Bridge, W. Ingham, in W. Ingham's Herbarium at Leeds University.
 267. *Frullania dilatata* (L.) Dum. No further record.
 268. *Anthoceros punctatus* L. No further records. (See Gibson's record in Introduction.)

***Liriomyza eupatorii* Kalt. (Diptera, Agromyzidae) new to Yorkshire.**—I swept a single specimen of *Liriomyza eupatorii* Kalt. from the Tarn Fen area of Malham Tarn (V.C. 64), on July 26th, 1956. This species was added to the British fauna by Spencer (*Entomologist's Gazette*, 5, 1954) from specimens reared from mines taken in Chippenham Fen, Cambs., in July 1954. A search of the British literature has not yielded any further records of this species and it would appear therefore that the Malham specimen is the second British record.

According to Spencer (*Ent. mon. Mag.*, 90, 1954) the mine is most characteristic in appearance: it begins with a tightly-coiling spiral, subsequently visible as a brown patch, and then continues along the leaf as a whitish, upper surface, linear mine. Pupation takes place externally. The food-plant is recorded as *Eupatorium cannabinum* L. and *Galeopsis* spp.

My thanks are due to Mr. K. A. Spencer for his identification of my specimen.—H. M. RUSSELL.

A Leech New to Yorkshire.—Leeches in Yorkshire have received little attention from naturalists and for many years the main account of them has been the one written in *The Naturalist* (107-108, 1943) by the late Mr. H. Whitehead, under the title of 'Freshwater Leeches of Yorkshire'. At that period nine of the eleven British species were known to inhabit Yorkshire, and two were unrecorded. One of these was the almost extinct British species the Medicinal Leech, *Hirudo medicinalis* L. The other was the Flat Fish Leech, *Hemiclepsis marginata* O.F.M. Six years after Whitehead's paper, *H. medicinalis* was recorded from Randy Mere near Goathland (*The Naturalist*, 20, 1949) and in 1951 the writer and Whitehead had the pleasure of examining a Medicinal Leech found by Mr. N. C. Drummond, taken in a pond on Strensall Common. These finds brought the Yorkshire list up to ten species and the only remaining leech was found by the writer in company with Mr. William Wakefield during the summer of 1957 when a single example of *Hemiclepsis marginata* was taken from beneath a stone in the lake at Bretton in South-west Yorkshire. This leech is rather widespread in Southern England, and has been found in the Lake District. Further search will no doubt bring to light more stations for *H. marginata* in Yorkshire, its apparent rarity being no doubt due to lack of workers in this group.

The area of discovery at Bretton was a quiet bay with much aquatic vegetation, the dominant plants being *Potamogeton crispus* L. and *Polygonum amphibium* L. Many flat stones of various sizes littered the bed of the lake, the only leech found here in addition to *H. marginata* being *Helobdella stagnalis* L. a very common species in Yorkshire.

In appearance *H. marginata* is most striking, being of a bright green colour with four rows of evenly-placed yellow dots on the surface. It is parasitic on various species of fish to which it attaches itself and when fed drops from its host to rest beneath the nearest stone.

The finding of *A. marginata* completes Whitehead's 1943 list, but since then four more species of leech have found their way to Britain, but at present all are very limited in their range.—E. THOMPSON.

THE weather was not as good as might have been hoped for our field meetings during 1957. The Saturday of the Whitsun meeting at Leyburn and the Sunday of the second week-end meeting at Goathland were wet almost throughout and there was also rain on the Saturday at Goathland. Three of the eight days covered by the meetings were thus wet. The total number of members attending the five meetings was slightly down on the last two years, being a little over 160, as compared with 170 to 180 in 1955 and 1956. This may be connected with a rather low attendance at the Whitsun meeting at Leyburn and the latter, in turn, with the circular being issued late and difficulty in obtaining accommodation. Rain early in the day may have deterred some members who otherwise would have gone to Stainborough. On the other hand it was very satisfactory to have 40 members at the V.C. 61 meeting and the success of the Goathland meeting provided further evidence that it was a good thing to revive the former Union practice of having two week-end meetings in the year.

The most interesting species found during the year's field meetings undoubtedly were flowering plants. At the Goathland meeting *Carex limosa* L. was found at Fen Bog. It is not known for certain to exist in any other locality in Yorkshire. At the Leyburn meeting the rediscovery of *Minuartia tenuifolia* (L.) Hiern (Fine-leaved Sandwort) and the finding of *Valerianella carinata* Lois (Corn Salad) were particularly interesting. The accounts by Dr. Sledge of botany at these meetings, printed below, should be consulted.

PATELEY BRIDGE, V.C. 64, May 25th

For our first general field meeting of the year we had a fine day but it did not fulfil its early promise and became mainly dull with a rather strong cool breeze. More than 30 members were present, including a botanical party filling in the B.S.B.I. cards. Bluebells, Greater Stitchwort, Lady's Smock, Ramsons and Wood-sorrel were still prominent in spite of its being such an early year. *Minuartia verna* (L.) Hiern (Vernal Sandwort) was making a great show in places. It was not a good day for collecting insects and Tipulids, for instance, were very scarce on the wing. The writer devoted some time to noting the insect visitors to late spring flowers in a sheltered place in Merryfield Glen. Some of the ornithologists went higher up the dale to Gouthwaite Reservoir. We were fortunate in that petrol rationing ended just prior to this, the first of the summer meetings.

Ornithology (R. F. Dickens): Although some members visited Gouthwaite Reservoir, where the normal species for this well-known locality (including a Hawfinch) were seen, the areas receiving concentrated attention were Guisecliff and Ravensgill Woods, and the moors immediately above. Here 52 species were noted.

Most of the normal woodland species were recorded, but no Chiffchaffs, only one Wood-Warbler, and very few Garden-Warblers and Blackcaps. Willow-Warbler and Tree-Pipit were the commonest species. Ring-Ousels were seen and heard on the edge of the moor and well down in Guisecliff Wood. Redstarts were spread fairly well. A Pied Flycatcher's nest with seven eggs was found, and at least one other pair was present. A single Green was the only woodpecker noted, and raptors were represented by one Kestrel. Pheasants were fairly numerous which might explain the absence of raptors rather than *vice versa*. A juvenile Dipper in Ravensgill was wearing a bright new ring.

Mammalia: Mr. Beck reported that there was a freshly-killed rabbit at the keeper's house.

Lepidoptera (F. Hewson): With the cold wind and almost complete absence of sunshine, lepidoptera were extremely scarce, and other members of our Committee, whose attentions were divided, had no reports. I spent my time about one mile south-west of Pateley, and had a short walk over the heather on Low Moor. During the one brief spell of sunshine a few *Callophrys rubi* L. (Green Hairstreak) were about. Both sexes of *Ematurga atomaria* L. (Common Heath) were to be seen, but surprisingly nothing of any stage of the three large moths which are usually common on all our moors.

The triangular wood immediately to the north of Low Moor looks very promising to a lepidopterist, being a mixed one with Oak, Mountain Ash, Birch, Beech, Hawthorn, Sycamore and our favourite Sallows. I saw, however, only *Adela reamurella* L. (*viridella* Scop.) flying. The Sallows immediately adjacent to the moor had many

twigs with two or three leaves spun together by caterpillars to form tents for their protection, and the majority of these were of a species which Mr. J. Briggs identifies for me as *Hydriomena furcata* Thun. (July Highflyer).

Botany (L. I. Scott): The party crossed the Nidd at Pateley Bridge and walked up from Heathfield. The botanists were scattered but B.S.B.I. cards were filled in and some 200 species were recorded. The flowering plants and ferns were mainly those expected on acidic soils. *Minuartia verna* (L.) Hiern (Vernal Sandwort) was present in quantity and showed marked preference for the debris from old lead workings. One plant of *Genista tinctoria* L. (Dyer's Greenweed) was seen, not in flower. A patch of *Viola lutea* Huds. was probably indicative of a limestone outcrop. Ferns were in good condition and included *Thelypteris oreopteris* (Ehrh.) C. Chr. (Mountain Fern).

A flush near lead workings showed a prolific growth of the mosses *Philonotis fontana* (Hedw.) Brid. and *Bryum pseudotriquetrum* (Hedw.) Schwaegr. *Polytrichum piliferum* Hedw. was fruiting freely on the sandy roadside.

Some members visited the top of Greenhow Hill after the main excursion. *Coeloglossum viride* (L.) Hartm. (Frog Orchid) was in flower. *Saxifraga granulata* L. and *Sax. hypnoides* L. were seen and the patch of London Pride which has been known from Greenhow for about 100 years.

LEYBURN, V.C. 65, Whitsun, June 8th—10th

A very successful meeting was held at Leyburn and the timely ending of petrol rationing allowed a greater area of country to be covered than expected when the circular was drawn up. Rain all day on Saturday made it impossible to cover the whole of the route chosen. Sunday and Monday were fine, but on Sunday some members—mainly botanists—found Bolton Gill so interesting that they never got to Calamine House. Monday was a perfect day and, as the party split up, a fair part of the district was covered. The Divisional Secretary wishes to say that the success of the meeting was largely due to the careful planning of Mr. J. P. Utley who took over all the arranging, chose the routes, got the permits and led the party. His knowledge of the district was invaluable. At the meeting on Monday, 15 societies answered to the roll call.

Only part of the Leyburn district was worked and it is hoped to have another week-end meeting in the same area to continue investigation of the flora and fauna.

Mammalia (J. P. Utley): Not many species were noted and a number of these were dead ones!

A few hares were seen but only four rabbits were recorded. No stoats were visible but a weasel dared to face some members of the party. One grey squirrel was seen but no live hedgehog was noted. Heading the list in numbers was the water vole.

Saturday's rain did not seem to have rejuvenated any frogs, toads or newts and there were no adders to make cautious walking necessary, nor were any grass snakes seen.

Small trout were seen in miniature stream pools at an altitude of 1,400 feet.

Ornithology (J. P. Utley): Moorland and meadow, ravine and river can normally be expected to give a varied assortment of birds, and the country explored during the meeting at Leyburn did not fail to yield this, for the creditable total of 75 species was recorded. Perhaps the outstanding observation was that of Short-eared Owls feeding fledged young. Here was evinced that element of luck well known to ornithologists for the incident was seen on Sunday but when the same area was visited on Monday the birds had left; however, there was compensation in good views of both Merlin and Stock Dove, neither of which were seen the previous day. Except in certain districts Curlew and Lapwing were not numerous. Breeding pairs of Golden Plover were noted in but one tract of country visited though odd birds were encountered elsewhere. Snipe were not plentiful even in what might be considered a typical habitat. Several pairs of Ring-Ousel were located but not many Wheatears, and Whinchat was but once recorded.

Predatory birds were not often seen, Kestrel, Sparrow-Hawk, Tawny Owl and Little Owl being noted. Carrion Crows were too plentiful but Magpie and Jay were little seen—or heard.

There was a goodly assortment of the smaller birds but the paucity of Yellow-Buntings and Linnets was commented upon by many members. Neither Goldfinch nor Lesser Redpoll were recorded though both are known to be in the area.

The Heron was a notable omission from the list of larger birds seen; this may be due to there being no heronry within a radius of many miles. Oystercatchers were present on the River Yore and below Wensley a Lesser Black-backed Gull had found a good bathing place.

Of the Anatidae, Mallard and Teal were seen and by its behaviour the latter had evidently got young in the neighbourhood. The nests of several species were found but fledged young were more commonly seen.

Although no outstanding record was forthcoming the report in general can be considered quite satisfactory.

Conchology (Mrs. E. M. Morehouse): The Whitsuntide meeting at Leyburn was not ideal for molluscs, because of the prevailing cold wind, but quite a number of species were seen in Bolton Castle Woods and the Quarry below the Shawl.

No. 1 represents Agglethorpe Quarry and area, June 8th.

No. 2 represents Bolton Castle Woods, June 9th.

No. 3 represents Quarry below the Shawl, June 10th.

Pyramidula rotundata Drap. 1, 2, 3.

P. rupestris Drap. 1, 2.

Helix hortensis Müll. 1.

H. nemoralis L. 2.

H. aspersa Müll. 3.

Arianta arbustorum L. 1, 2, 3.

Hygromia rufescens Pent. 1, 2, 3.

H. hispida L. 3.

Balea perversa L. 1, 2.

Clausilia bidentata Ström. 1, 2, 3.

C. laminata Montagu 2.

Vitrea pura Alder 2, 3.

V. alliaria Müll. 2, 3.

V. cellaria Müll. 3.

V. nitidula Drap. 3.

Jaminea cylindracea Da Costa 2.

Carychium minimum Müll. 3.

Azeca tridens Pult. 2.

Cochlicopa lubrica Müll. 2, 3.

Helicigona lapicida L. 3.

Helicella itala L. 3.

Ena obscura Müll. 3.

Limnaea pereger Müll. 3.

Vallonia pulchella Müll. 3.

Euconulus fulvus Müll. 3.

Agriolimax agrestis L. 1, 2, 3.

A. agrestis v. *reticulata* Moq. Tan. 3.

Arion ater 1, 2, 3.

A. ater v. *plumbea* Roebuck 2.

A. ater v. *brunnea* Roebuck 1.

Limax arborum Bouchard Chantereux 1, 2.

In the Agglethorpe, quarry *H. hortensis* Müll. with only one or two exceptions were all the type form.

I believe *H. lapicida* is a new record for this area.

Lepidoptera (F. Hewson): Mr. G. A. Shaw showed me a *Coenonympha pamphilus* L. (Small Heath), one of a number he had seen on Leyburn Shawl, and Miss D. Walker had two Tiger moths taken on the railway side at Redmire, *Parasemia plantaginis* L. (Wood Tiger) and *Phragmatobia fuliginosa* L. (Ruby Tiger). Unfortunately I had only the one day at Leyburn and although conditions appeared to be ideal the results were most disappointing, the few species found being all common ones.

Flowering Plants (W. A. Sledge): With Whitsuntide falling in June and being preceded by a long spell of fine weather flowers were considerably more plentiful than is usual at this holiday meeting. The botanical section was well represented and its members were energetically employed filling in B.S.B.I. distribution cards. Two squares were covered in the course of the week-end.

On Saturday despite persistent rain which fell throughout the day 218 species were noted. The most interesting were *Allium scorodoprasum* L. (Sand Leek) and *Orchis ustulata* L. (Burnt-tip Orchis), the latter represented by about two dozen flowering spikes in a field between West Witton and the river Ure. The excursion to Bolton Gill and Apedale on Sunday was favoured by better weather and Monday's walk via Leyburn Shawl and Gillfield Wood and back along the railway track from Wensley was completed in warm sunshine. Both these excursions fell in the same ten-kilometer square and over 300 species were noted. Bolton Gill yielded no plants of special note but on the moor above the gill *Botrychium lunaria* (L.) Sw. (Moonwort) was seen in abundance and disturbed ground and spoil heaps about the old mine workings yielded, as is invariably the case in this area, *Minuartia verna* (L.) Hiern (Spring Sandwort) and *Thlaspi alpestre* L. (Alpine Cress). At Leyburn Shawl, where *Euonymus europaeus* L. (Spindle Tree) and *Rhamnus cathartica* L. (Buckthorn) occur in the woodland, a colony of *Trifolium striatum* L. (Soft Trefoil) was seen on a dry exposed limestone edge. The locality is situated at 800 feet O.D. and is probably its most elevated station in the country. Miss Rob saw the same species in several

places in the quarries behind Leyburn Shawl where she also re-found *Minuartia tenuifolia* (L.) Hiern (Fine-leaved Sandwort). We had, independently, both searched for this unsuccessfully on previous occasions and the verification of this old record was one of the best finds of the meeting. Another notable record was made by the railway line from Wensley to Leyburn where *Valerianella carinata* Lois. was found, a discovery which, despite the situation in which it grew, may cast a different light on the old Wensleydale record given in Baker's *Supplement* (1854) to Baines's *Flora of Yorkshire* which Baker rejects in *North Yorkshire*.

Other interesting species seen in the course of the week-end included *Geranium phaeum* L. Redmire (Dusky Cranesbill); *G. pyrenaicum* Burm. f. (Mountain Cranesbill) by the Leyburn-Grinton road; *Cochlearia alpina* Wats. (Mountain Scurvy-grass), Apedale; *Alchemilla minor* Huds. sec. Wilmott (Lady's Mantle), pasture west of Gillfield Wood, leg. G. A. Shaw, conf. S. M. Walters; *Senecio squalidus* L. (Oxford Ragwort) and *Diploxia muralis* (L.) DC. (Wall Rocket), by Wensley-Leyburn railway line; *Salix atrocinerea* × *purpurea*, wet wood near Wensley-Leyburn railway line and *Ophioglossum vulgatum* L. (Adders Tongue Fern), Redmire.

STAINBOROUGH, V.C. 63, June 22nd

It was unfortunate that a break in the heat wave coincided with the Stainborough excursion and rain which fell in the morning may have deterred some members from making the journey. In the morning Mr. J. T. Boothman led the party round the 'Wilderness' and the Serpentine. The former is famed for its display of rhododendrons but these were past their best. In the afternoon members of the Barnsley Naturalists' Society and other Union members brought the total number present to 33. It remained dull and rather cold but fine. After skirting the Serpentine the party proceeded through part of the now much depleted Rockley Woods to Rockley Dam. On all sides were seen the results of open-cast coalmining.

After tea at the Trafford Arms Hotel a short meeting was held at which Miss L. I. Haigh, President of the Barnsley Naturalists' Society was invited to take the chair. Seven societies were represented.

Ornithology (A. Archer): Altogether 60 birds were either seen or heard. In the old castle was found the nest of the Stock-Dove. Large numbers of Jackdaws nest in the old buildings and trees in the grounds and Magpies and Jays are extremely common. At least six Greater Spotted Woodpeckers were heard or seen, one nest being found. A Tree-Sparrow's nest was found in a hole made by a Woodpecker. Other nests found were those of the Chaffinch (with young), Great-Tit (with young), Blue-Tit (with young), Wren (with eggs). Two Herons were seen flying over Stainborough Park (they feed regularly in the Serpentine) and four Tawny Owl were seen in the Wilderness. At Rockley Dam the Garden-Warbler and Blackcap were singing from the bushes. A brief visit to Worsbrough Reservoir showed a Tufted Duck, five Great Crested Grebe and two Mute Swans with their five cygnets. Moorhen, Coot and Mallard were also observed. A Snipe was seen in the Rockley Valley and the young of the Lapwing on some agricultural land.

Other birds noted were Kestrel, Partridge, Pheasant, Wood-Pigeon, Turtle Dove, Swift, Swallow, Sand-Martin, Skylark, Carrion Crow, Rook, Willow-Tit, Long-tailed Tit, Tree-Creeper, Thrush, Blackbird, Redstart, Sedge-Warbler, White-throat, Willow-Warbler, Chiffchaff, Spotted Flycatcher, Tree-Pipit, Pied and Yellow Wagtails, Greenfinch, Linnet, Bullfinch, Yellow- and Reed-Buntings.

Mammals and Amphibia (R. S. Atkinson): A rabbit was seen in Rockley Valley and there were numerous small frogs on the banks of the Serpentine.

Freshwater Biology (D. Shephard): From the Serpentine were collected examples of *Corixa*, *Notonecta*, the larva of *Dytiscus marginalis* and nymph of the Damsel Fly. A leech was taken at Rockley Dam.

Conchology (Mrs. Morehouse): The only specimens seen were *Limnaea stagnalis* and *Planorbis umbellata* from the Serpentine and an empty shell of *Patrina pellucida*.

Botany (C. Jukes): The chief centre of interest was the Serpentine, once a large ornamental water similar to others in the Barnsley area. In parts only mud remains, the drainage having been upset by open-cast mining in the vicinity. The most interesting plant found was *Apium inundatum* (L.) Rchb. Amongst others recorded were *Ranunculus sceleratus* L. (Celery-leaved Crowfoot), *Scutellaria galericulata* L. (Skull-cap), *Sparganium ramosum* Huds. (Bur-reed), *Alisma plantago-aquatica* L. (Water-Plantain), *Ranunculus flammula* L. (Lesser Spearwort), *R. aquatilis* L.

(Water Crowfoot), *Potamogeton natans* L. (Broad-leaved Pondweed), *Caltha palustris* L. (Marsh Marigold), *Galium palustre* L. (Marsh Bedstraw), *Juncus squarrosus* L. (Heath Rush), *J. conglomeratus*, *Luzula campestris* (L.) DC. (Field Woodrush), *Eleocharis palustris* (L.) R.Br., *Equisetum fluviatile* L. On the dry grassy slopes some distance from the water *Galium hercynicum* Weigel (Heath Bedstraw) was plentiful together with *Digitalis purpurea* L. (Foxglove). *Solanum dulcamara* L. (Bittersweet) was also found growing on the edge of the water. *Asperula odorata* L. (Sweet Woodruff) occurred in the hedgerow near the hotel. In the Rockley area *Conium maculatum* L. (Hemlock) was found and a patch of *Senecio squalidus* L. (Oxford Ragwort).

Fungi (Miss E. M. Blackwell): Several specimens of *Polyporus sulphureus* (Bull.) Fr. were found growing on Yew trees. A field of wheat was seen to be attacked by the smut *Ustilago nuda* (Jens.) Rostr. *U. tragopogonis-pratensis* (Pers.) Roussel, causing smut of goatsbeard, was also met with.

BISHOP WILTON, V.C. 61, July 6th

Owing perhaps to distance from the larger centres of population the V.C. 61 meetings have sometimes been rather poorly attended and it was therefore very pleasing that about 40 members (and several children) were at the Bishop Wilton meeting. Ten societies answered to the roll call at the meeting following tea at the Fleece Inn. The weather was hot and almost sultry, in spite of a breeze which freshened with an increase of cloud in the afternoon. The morning was spent in an old quarry opposite the Manor House—a pleasant place with a remarkable display of Viper's Bugloss covering an expanse of steep chalk slope. After lunch, marshy ground in the valley bottom and arable ground on the hillside farther up the valley were examined and then the party went to the grounds of Garrowby Hall, the home of Lord Halifax. Here Mr. Harrison, the Head Keeper, showed us part of the grounds and woodland rides. An area near the outflow from the lake looked very interesting from the entomological point of view, but time allowed of little work.

Mammals (R. Chislett): The plenitude of hares was attributed by Mr. Harrison (Head Keeper) to the mildness of last winter. Three were watched at play. No rabbit was seen and a stoat scampered down a path before us.

Ornithology (R. Chislett): At this date, after a long, dry period, few birds were in song. In the areas selected (mainly for botanical reasons) 40 species were identified and the list could have been extended. Only one Partridge was seen although both species occur. A Sparrowhawk (deceased) and one Kestrel represented the hawks. In the woods were noted: Turtle Dove, Tawny Owl, Tree-Creeper, Marsh-Tit, Goldcrest and Blackcap. The Spotted Flycatcher was more numerous than I have seen it anywhere else this year. Other species noted included: Green Woodpecker, Wren (singing loudly), Whinchat, numerous Skylarks, Meadow- and Tree-Pipits, Pied Wagtail, Greenfinch, Goldfinch, Linnet, Yellowhammer, Whitethroat, etc.

Conchology (Mrs. E. M. Morehouse): The Bishop Wilton excursion was quite good for conchology. On the hill by the wood a number of empty shells were seen, chiefly of *Arianta arbustorum* L. The following species were noted:

Helix nemoralis L.

Hygromia rufescens Pent.

Arianta arbustorum L.

H. granulata Alder.

Theba cantiana Montagu.

Limnaea pereger Müll.

Patula rotundata Müll.

Limax arborum Bouchard-Chantereux.

Helicella itala L.

Arion ater v. *succinea* Müll.

H. virgata Da Costa.

Milax gagates v. *plumbea* Drap.

Cochlicopa lubrica Müll.

General Entomology (D. H. Smith): The species taken included the following: Coleoptera: *Dascillus cervinus* (L.), *Athous hirtus* (Hbst.), *Aphodius haemorrhoidalis* (L.), *Patrobus septentrionis* (Dej.) (Garrowby Park, pondside); Hemiptera: *Leptopterna dolabrata* (L.), *Calocoris norvegicus* (Gmel.); Diptera: *Cynomyia mortuorum* (L.), *Lucilia caesar* (L.), *Eristalis nemorum* L., *Melanostoma mellinum* L., *Zylota sylvarum* L. (Garrowby Park, poolside), *Machimus atricapillus* (Fln.), *Chloromyia formosa* (Scop.).

Except where stated otherwise the locality was Bishop Wilton.

Lepidoptera (F. Hewson): To a resident of the West Riding the most pleasing feature was the abundance of *Aphantopus hyperantus* L. (Ringlet) and *Polyommatus icarus* von Rott. (Common Blue), the former because of its rarity with us and the

latter because of its beauty. Other butterflies noted were *Maniola jurtina* L. (Meadow Brown); *Coenonympha pamphilus* L. (Small Heath); *Vanessa atalanta* L. (Red Admiral), three; *Aglais urticae* L. (Small Tortoiseshell); *Lycaena phlaeas* L. (Small Copper); *Thymelicus sylvestris* Poda (Small Skipper) and *Augiades venata* Br. & Gr. (Large Skipper).

Moths seen or taken included *Triphaena pronuba* L. (Large Yellow Underwing); *Plusia gamma* L. (Silver Y); *Euphyia bilineata* L. (Yellow Shell), abundant; *Xanthorhoe montanata* (Silver-Ground Carpet), common; *Calostigia pectinataria* Knoch (Green Carpet); *Odezia atrata* L. (Chimney Sweeper); *Bapta punctata* Fab. (Clouded Silver), one; *Cerura furcula* Clerck (Sallow Kitten), one larva; and *Zygaena filipendulae* L. (Six-Spot Burnet). Mrs. J. Payne had seen *Zygaena trifolii* Esper (Five-Spot Burnet) the previous week-end. The scarcity of larvae was noticeable. It may be said that not more than three of the above are at all uncommon and we saw none of the rarities which may have been taken, but following the poor reports of previous meetings this year it is pleasing to record an abundance of Lepidoptera, and of Lepidopterists!

Flowering Plants (Miss F. E. Crackles): The old quarry and the steep valley sides proved to be a happy hunting ground for the many botanists attending the meeting. In the quarry, was a particularly fine show of *Echium vulgare* L. (Viper's Bugloss) and of *Anacamptis pyramidalis* (L.) Rich. (Pyramidal Orchid) and some fine plants of *Cirsium eriophorum* (L.) Scop. (Woolly Thistle). Other plants occurring on the chalk in the area included: *Arabis hirsuta* (L.) Scop. (Hairy Rock Cress), *Astragalus danicus* Retz. (Purple Milk Vetch), *Brachypodium pinnatum* (L.) Beauv. (Heath False Brome), *Campanula glomerata* L. (Clustered Bell Flower), *Carduus nutans* L. (Musk Thistle), *Carex caryophyllaea* Latour (Spring Sedge), *Carlina vulgaris* L. (Carlina Thistle), *Catapodium rigidum* (L.) Hubbard (Hard Poa), *Cerastium arvense* L. (Field Mouse-Ear Chickweed), *Filipendula vulgaris* Moench (Dropwort), *Galium verum* L. (Lady's Bedstraw), *Hieracium pilosella* L. (Mouse-ear Hawkweed), *Knautia arvensis* (L.) Coult. (Field Scabious), *Linum catharticum* L. (Purging Flax), *Phleum nodosum* L. (Cat's tail), *Pimpinella saxifraga* L. (Burnet Saxifrage), *Plantago media* L. (Hoary Plantain), *Poterium sanguisorba* L. (Salad Burnet), *Reseda lutea* L. (Wild Mignonette), *Scabiosa columbaria* L. (Small Scabious), *Stachys officinalis* (L.) (Betony), *Torilis nodosa* (L.) Gaertn. (Knotted Hedge Parsley), *Trisetum flavescens* (L.) Beauv. (Yellow Oats), *Galeopsis angustifolia* Hoffman (Narrow-leaved Hemp Nettle) and *Helianthemum chamaecistus* Mill. (Rock Rose).

Species found on waste ground near the Manor House included *Urtica urens* L. (Small Nettle), *Valerianella dentata* (L.) Poll., *Geranium pusillum* Burm. f. (Small Flowered Geranium) and *Trifolium hybridum* L. (Alsike Clover).

On the edge of a cornfield above the valley *Lamium amplexicaule* L. (Henbit) was noted, but a fruitless search was made for plants of *Saxifraga tridactylites* L. found on arable ground earlier in the year.

On marshy ground at the foot of the wolds were noted *Caltha palustris* L. (Marsh Marigold), *Lychnis flos-cuculi* L. (Ragged Robin), *Stellaria alsine* Grim. (Bog Stitchwort), *Alopecurus geniculatus* L. (Marsh Foxtail) and *Glyceria plicata* Fr.

A visit was also paid to the grounds of Garrowby Hall. Some particularly fine specimens of *Orchis fuchsii* Druce were seen and other plants of interest noted were *Hieracium brunneocroceum* Pugs. (Orange Hawkweed), *Senecio erucifolius* L. (Hoary Ragwort), *Vicia tetrasperma* (L.) Schreb. (Smooth Tare), *Trifolium medium* Huds. (Zig-zag Clover), *Carex contigua* Hoppe and *C. sylvatica* Huds. (Wood Sedge).

Bryology (F. E. Branson): The weather was most unsuitable for the Bryophyta and I did not see a single hepatic the whole day. The mosses seen were as follows: Quarry at Bishop Wilton:

Pseudoscleropodium purum (Hedw.) Fleisch.
Camptothecium lutescens (Hedw.) Brid.
Campylium chrysophyllum (Brid.) Bryhn.
Rhytidadelphus squarrosus (Hedw.) Warnst.
Acrocladium cuspidatum (Hedw.) Lindb.

Garrowby Park:

Mnium hornum Hedw.
Eurhynchium praelongum (Hedw.) Hobk.
Hypnum cupressiforme Hedw.
Fissidens bryoides Hedw.
Cratoneuron filicinum (Hedw.) Roth.

Boggy ground near quarry:

Acrocladium cuspidatum (Hedw.) Lindb.

GOATHLAND, V.C. 62, July 12th—14th

Fifteen Union members stayed in Goathland over the week-end, mainly at the Grange Hotel, where Mrs. Wright and Miss Cherrett made us comfortable over a rather wet week-end. In addition, 17 members came on either the Saturday or Sunday, but did not stay overnight, 13 societies being represented at the meeting. Saturday morning was dull and the first of a number of heavy showers came about lunch time when the party was at Fen Bog. Heavy rain early Sunday morning stopped before we went out, but mist hung on the moor tops and there was heavy rain again by early afternoon and rain continued intermittently for the rest of the day. Saturday was devoted to Fen Bog and a strong botanical party found a good deal of interest, especially in the Cyperaceae. On Sunday, cars were left at Saltersgate and, under the guidance of Mr. Bartlett of the Forestry Commission, we walked to the steep east slope of Newtondale and the more active and/or intrepid members followed him down a perilously steep and slippery path through the native hillside woodland and across the beck and railway to the west side of the dale. Others confined their attentions to the Saltersgate area and two members visited Dalby Marsh in Thornton Dale. Of the plants mentioned for this station in the account of the 1941 meeting they found Grass of Parnassus present in great quantity, also *Triglochin palustris* L. (Marsh Arrow Grass). *Cirsium heterophyllum* (L.) Hill (Melancholy Thistle) was not found, but *C. dissectum* (L.) Hill (Meadow Thistle) was present in quantity but not flowering much. *Antennaria dioica* (L.) Gaertn. (Cat's Foot), *Eriophorum latifolium* Hoppe (Broad-leaved Cotton Grass) and *Selaginella selaginoides* (L.) Link (Lesser Clubmoss) were present but, like the Meadow Thistle, not among those mentioned in the 1941 account.

Ornithology (D. F. Walker): Considering the time of year and the weather conditions prevailing the 'tally' of 53 species identified was considered satisfactory.

As the botanists combed Fen Bog the Sedge-Warblers kept up a chorus of protest and Snipe were flushed, whilst on the bracken covered slopes of Newtondale the Yellow Bunting was numerous. Ring-Ousel were also seen. It was good to see several family parties of Redstart, Great-Tit, Blue-Tit and Greenfinch and the conifers along the side of the old railway track produced numerous Goldcrests and Lesser Redpolls. In the deep wooded valleys of West Beck and Eller Beck the raucous note of the Jay was often heard and this bird also fed in the playground of Goathland village school. On the stream below Mallyan Spout were Grey Wagtails and the Pied was numerous about the village. Green Woodpecker and Pheasant were heard but the warblers were silent in the wet woodland. Birds of prey were scarce, only Tawny Owl, Kestrel and Sparrow-Hawk (one of each) were noted. Goldfinch and Bullfinch were both heard and a Spotted Flycatcher fed young at Eller Beck. There were very few game birds.

Mammals and Reptiles (D. F. Walker): Very few rabbits were seen and the odd hare. In Newtondale an Adder and a Slow Worm were found.

General Entomology (Mrs. J. Flint): The weather inhibited systematic collecting and these notes are the result of such collecting as was possible. A solitary dragonfly, *Aeshna* sp., was seen in Fen Bog and the pond skaters, *Gerris costae* H.-S., *G. gibbifer* Sch. and *Velia caprai* Tam. were taken by Mr. John Horsman. A patch of old birches yielded the larvae of the large birch sawfly *Cimbex*, the uncommon beetle *Rabocerus gabrieli* Gerh. and the beetles *Cantharis pallida* Goeze and *C. cryptica* Ashe, among others. The leaf hopper, *Oncopsis flavicollis* L., was abundant.

A pool on Levisham Moor yielded large numbers of the water beetle *Helophorus flavipes* F., together with *Agabus guttatus* Pk., *Hydroporus discretus* Fair. and *H. nigrita* Fab. As might be expected, *Aphodius lapponum* Gyll. was found commonly in sheep dung.

I am indebted to my husband for the determination of the specimens.

Lepidoptera (Mrs. J. Payne): The visit to Fen Bog proved unproductive as the weather was dull and showery. Only common species were noted. Emperor Moth larvae were seen but Mr. D. Walker reported them to be less abundant than in the Bingley area.

A short hunt over Dalby Marsh proved more interesting even though rain was falling most of the time.

Species noted there were: *Aphantopus hyperanthus* L. (The Ringlet), four specimens; *Maniola jurtina* L. (Meadow Brown), three specimens; *Argynnis aglaja* (L.) (Dark Green Fritillary), three specimens; *Zygaena filipendulae* L. (Six-spot Burnet), five specimens; one *Triphaena pronuba* L. (Large Yellow Underwing); one *Plusia gamma* L. (Silver Y); one Cinnabar larva.

Flowering Plants (W. A. Sledge): Saturday's excursion was devoted to the examination of Fen Bog and the dykes adjacent to the railway line at the head of Newtondale. On Sunday the wooded middle region of Newtondale to the east of Saltersgate was explored. Both regions lie in the same ten-kilometre square which is rather uniform geologically, a large part consisting of peat moor and bog. In the course of the two days about 270 species were seen. Sedges were much in evidence, 30 species—including 21 species of *Carex*—being seen. These included *Rhynchospora alba* (L.) Vahl and *Carex limosa* L. both very rare in Yorkshire and the latter not now known with certainty elsewhere in the county.

Fen Bog and another wetter *Sphagnum* bog lying to the west of the railway line, yielded most of the species characteristic of very wet, acid peat bogs. These included *Drosera rotundifolia* L. (Sundew), *Oxycoccus palustris* Pers. (Cranberry), *Narthecium ossifragum* (L.) Huds. (Bog Asphodel), *Menyanthes trifoliata* L. (Bogbean), *Myrica gale* L. (Sweet Gale), *Eriophorum angustifolium* Honck. and *E. vaginatum* L. (Cotton-grass), *Molinia caerulea* (L.) Moench (Purple Moor Grass) and *Agrostis canina* L. (Brown Bent Grass). The sedges included *Eleocharis multicaulis* (Sm.) Sm., *Carex curta* Good., *C. echinata* Murr., *C. rostrata* Stokes and *C. limosa* L.

The dykes by the railway contained the Pondweeds *Potamogeton natans* L. and *P. alpinus* Balb. and the sedges *Carex rostrata* Stokes, *C. acutiformis* Ehrh. and *C. paniculata* L. together with *Typha latifolia* L. (Reed-mace), *Sparganium ramosum* Huds. (Bur-reed) and *Myriophyllum alterniflorum* DC. (Water-milfoil). A calcareous flush on the hillside immediately south of Fen Bog gave a number of additional sedges including *Eriophorum latifolium* Hoppe, *Eleocharis pauciflora* (Lightf.) Link, *Carex dioica* L., *C. hostiana* DC. and *C. lepidocarpa* Tausch, together with *Anagallis tenella* (L.) Murr. (Bog Pimpernel), *Triglochin palustris* L. (Marsh Arrowgrass) and *Selaginella selaginoides* (L.) Link.

On Sunday, Mr. Bartlett, the Forestry Officer, showed us *Chamaepericlymenum suecicum* (L.) Asch. & Graebn. (Dwarf Cornel) growing in abundance on the edge of the escarpment overlooking Newton Dale to the west of Saltersgate. It was however all sterile and doubtless fails to flower here on account of heavy shading by the bracken under which it grows. Some *Trientalis europaea* L. (Chickweed Wintergreen) accompanied the Dwarf Cornel. After the steep descent into Newtondale the woodlands on both sides of the valley were examined. That on the east side is still largely natural, consisting of Oak and Ash with Maple trees of large size. One or two Yews grow on the cliff face. The west slopes have now been reafforested with conifers. A calcareous flush on the west slope yielded *Parnassia palustris* L. (Grass of Parnassus) and *Gymnadenia conopsea* (L.) R.Br. (Fragrant Orchis) and the woodland nearby had *Thelypteris phegopteris* (L.) Slosson (Beech Fern), *Equisetum telmateia* Ehrh. (Great Horsetail), and the sedges *Carex laevigata* Sm. and *C. paniculata* L., the latter forming huge tussocks, were amongst the other species seen here.

CORRESPONDENCE

The Editor, *The Naturalist*.
Sir,

In *The Naturalist*, No. 859 (October-December 1956) an account was given of the Nest-box Scheme which the Leeds and District Bird Watchers' Club organised in 1954 in co-operation with the Leeds Corporation Parks and Education Departments.

Over 200 boxes have now been placed in the Leeds Parks, all constructed by schoolchildren, and the Club has been gratified by the interest shown by both the public and the children.

We should now like to make an appeal to all Yorkshire Natural History Societies to consider the possibilities of introducing such a scheme in their own areas. This Club would willingly place its experience at the disposal of any interested Society.

Yours faithfully,

A. H. B. LEE,
Hon. Secretary.

The Naturalist

AUTUMN FORAY, RICHMOND

September 28th—October 2nd, 1956

W. G. BRAMLEY

SOME thirty members and friends attended the Autumn Foray for the investigation of the Richmond neighbourhood. The weather was on the whole favourable though one or two sharp showers made shelter desirable on the Saturday which was spent in Black Woods. Here species were not abundant as most of the area is close planted and not yet mature. In the afternoon better conditions were found nearer Richmond in a mature mixed wood and in the surrounding fields. The following morning was mostly spent examining the material already gathered. After lunch Billy Bank Woods on the south side of the river Swale were visited but proved somewhat uninteresting. Monday took us to Colburn but here again conditions were dry and uninteresting though some patches were boggy. In the afternoon Whitcliffe Woods on the Reeth side of Richmond proved more productive though the ground was still somewhat on the dry side. In spite of this apparently bad report at all localities visited interesting species were found, though careful search was required. Excitement rose high in Billy Bank Woods when one of a party of school children brought an *Eccilia* (a genus members do not often see) which was thought at first to be new to Britain, though later examination proved this wrong. No other specimen could be found in spite of a further visit in the evening. In Whitcliffe Woods several examples of *Tremellodon* were found in perfect condition. Several interesting micro species were found, whilst the list of Myxomycetes was the largest recorded for many years.

Since the death of Mr. A. A. Pearson, who for many years attended our autumn forays and was largely responsible for the determinations of agarics, there is no doubt that many rare species have been passed over from lack of experience. It was with pleasure that we welcomed Mr. P. D. Orton of Reading, and the list of species is due largely to his presence. Other welcome visitors were Dr. and Mrs. Astley Cooper. The latter brought many of her mother's paintings of fungi and gave a short informal account of her father, Dr. Carlton Rea.

The thanks of the compiler are due to all who helped to collect and name, especially to Mr. Orton and Miss Watson for Agarics, Messrs. Collinge and Hincks who assiduously collected Mycenas, R. Watling for resupinates, W. D. Graddon for Discomycetes, and Messrs. Bates and Broadbent for Myxomycetes.

† Not in Mason & Grainger's *Catalogue of Yorkshire Fungi*.

* Not in Mason & Grainger for V.C. 65.

B.=Black Wood.

W.=Whitcliffe Wood.

C.=Colburn.

R.=Billy Bank Woods.

MYXOMYCETES

* *Physarum viride* Pers. var. *incanum* Lister.

† *Trichia floriformis* G. Lister.

† *T. botrytis* Pers. var. *munda* Lister.

DISCOMYCETES

† *Belonium piceae* var. *laricina* Vel., on *Pinus* (Note a).

† *Dasyscypha brevipila* Le Gal.

† *Helotium geogenum* Cooke (Note b).

† *H. imberbe* (Bull. ex Fr.) Fr.

† *H. laetum* (Boud.) Sacc. (Note c).

† *Leucoscypha leucotricha* (A. & S.) Boud. (Note d).

Microglossum viride (Pers. ex Fr.) Gill. W.

Pezicula livida (B. & Br.) Rehm.

* *Pezizella* (*Helotium*) *alniella* (Nyl.) Dennis.

* *P. chrysostigma* (Fr.) Sacc., on *D. filix-mas*, B.W. (In Mason & Grainger sub *Urceolella versicolor*.)

* *P. (Helotium) eburnea* (Rob.) Dennis, on grass stems. W.

* *Psilopeziza babingtonii* (B. & Br.) Le Gal. (In Mason & Grainger sub *Humaria oocardi*.)

**Rutstromia luteo-virescens* (Rob.) White.

†*Scutellinia stenosperma* Le Gal. (Note e.)

Mr. Graddon sends the following notes on the above:

- (a) You (W.G.B.) had this on *Larix* some time ago. My collection is on *Pinus* and seems to match perfectly.
- (b) and (c) Both rarely found. b is a medium-sized, whitish species of bare ground and has very large spores, $22-30 \times 4-5$.
- (d) Another rarity. Looks like a pure white *Scutellinia* and grows on forest litter. I found it in plenty in the Ardennes, Belgium, only a week or so previously.
- (e) Common but overlooked species. Hairs short and stiff. Spores more narrowly elliptical than *S. scutellata* and studded with conspicuous warts.

PYRENOMYCETES

Diatrype bullata (Hoffm. ex Fr.) Fr., on *Salix*, W.

†*Valsa curreyi* Nits., on *Larix*, B.

HYPHOMYCETES

Dactylium dendroides (Bull.) Fr., on *Hygrophorus* sp., B.

†*Ramularia variabilis* Fuckel, on *Digitalis*, B.

Tilachlidium (Isaris) brachiata (Batsch ex Fr.) Petch, on an agaric. Det.C.M.I.

†*Passalora graminis* on *Glyceria*, W. Det. C.M.I.

UREDINALES

**Puccinia agropyrina* Erikss., on *A. repens*.

**P. antirrhini* Ditm., on *A. majus*.

AGARICALES

**Cantharellus tubaeformis* Fr., B.R.

†*Clitocybe dicolor* (Pers.) Lange, R.

**C. ditopus* Fr., B.

†*C. langei* Singer, B.

†*Clitopilus cretatus* B. & Br., R.

†*Cortinarium causticus* Fr., R.

†*C. flexipes* Fr., R.

†*C. hoeflii*, W.

C. largus Fr., R.

**C. lepidopus* Cooke, R.

**C. obtusus* Fr., B.R.W.

**C. pholideus* Fr., W.

†*C. sertipes* Kühner, B.W.

**C. torvus* Fr., R.W.

†*Eccilia undata* (Fr.) Big. & Guill., R.

**Flammula carbonaria* Fr., R.

†*F. lenta* (Pers.) Fr., B.

†*F. penetrans* Fr., B.

†*Hygrophorus atropunctus* (Pers. ex Fr.)
Smith & Hesler, W.

†*H. brevispora* Möller, C.

†*H. chrysopsis* Metrod, R.

**H. hypothecus* Fr., B.

†*H. subradiatus* (Schum) Fr., C.

†*Inocybe maculata* Boud., W.

**I. napipes* (Lange) Pearson, B.

**Lactarius tabidus* Fr., B.

†*Marasmius recubans* Quél., B.

†*Mycena fibula* (Bull. ex Fr.) Kühner.

†*M. alba* (Bres.) Kühner, teste Orton.

†*M. olida* Bres.

†*M. oortiana* Kühner, C.

**M. pterigena* (Fr.), Kummer, C.

†*M. vitilis* (Fr.) Quél.

**Naucoria scolecina* Fr., C.

**N. sideroides* (Bull.) Fr., B.

†*N. subincarnata* Joss. & Kühn = *N.*
pygmaea sensu Favre, R.

**Pluteus salicinus* (Pers.) Fr., C.

†*Psathyrella squamosa* (Karst.) Kühn &
Rom., R.

†*Psilocybe elongata* Fr., B.

†*Russula aeruginea* Lindb.

†*R. curtipes* Moeller and J. Schaeffer.

†*R. mairei* Singer.

**Tricholoma orirubens* Quél.

†*T. sciodes* (Secht.) Marten.

**T. ustale* Fr.

APHYLLOPHORALES

**Corticium confine* Boud.

†*Gleocystidium pallidum* (Pers.) Höhnelt
& Litsch.

**Peniophora pubera* (Fr.) Sacc.

**Phylacteria anthocephala* (Bull.) Pat., B.

**Clavaria botrytis* (Pers.) Fr.

Tremellodon gelatinosum (Scop.) Pers.,
W.

BOOK REVIEWS

The World of the Soil, by **Sir E. John Russell**. Pp. xiv+237 with 4 colour photographs, 44 photographs in black and white and 11 text figures. Collins, *New Naturalist Series*. 25/-.

The professional reputation of Sir E. John Russell is such that soil scientists the world over seriously consider his words whether spoken or written. The reputation of the *New Naturalist* series of volumes is equally enviable for its presentations of natural history topics to an intelligent reading public. The *World of the Soil* is a particularly happy collaboration of these two institutions, if the doyen of agricultural science will forgive being likened to an institution.

The book is written in a facile style, such jargon as is necessary to make the scientific points clear is easily explained without loss of precision and the subject matter will not only interest the soil specialist but will fascinate the geologist, bacteriologist or the botanist, the entomologist, zoologist or the geographer, the sociologist, the farmer or the amateur gardener, all of whom will find aspects of their own special interests reflected in this book of the soil.

The first five chapters cover the constitution and properties of soil material and those collective properties which make the soil the ideal medium for the support of the vast and multifarious range of living organisms. The range of the living population gets full description, and the dynamic nature of this intricate biological equilibrium is well discussed. After turning attention to the requirements of a plant population in terms of nutrients and physical environment of roots a succinct summary of more general topics including the soil and landscape, and agricultural productivity of soils bring the text to a close. A selected bibliography for further reading and an index are added for good measure.

The illustrations and figures are apt and the few tables of figures instructive and never tedious. A few errors have crept through the proof and in spite of an impression given that Rothamsted has a virtual monopoly of soil researchers it is a book to be strongly recommended.

W.N.T.

The Life of The Shrew, by **Peter Crowcroft**. Pp. 166 with 9 photographs. Reinhardt. 15/-.

It should be a matter of great reproach to British naturalists that the first authoritative account of one of our commonest mammals comes from a Tasmanian who has lived in this country for no more than eight years.

Since it is impossible to make much progress with their study when at large, Dr. Crowcroft's first necessity was to devise a technique for keeping shrews in captivity under conditions which would simulate their normal habitat and yet permit a sustained record of their activities and his account of the type of quarters, simple enough to make, and of the food required to keep the captives in good health should pave the way for those who would close the few gaps in his story.

Dr. Crowcroft's discoveries make it clear that many of the legends concerning shrews which are proffered as veritable in works of natural history are as far from the truth as the more spectacular ones in folk-lore. Experiment seems to prove, for example, that shrews are not readily killed by shock and their reputation for cannibalism appears to derive from their captivity in a space smaller than their territorial instincts will admit. All flesh is meat to them, however, and an animal which needs roughly its own weight in food a day will naturally not look askance at the carcase of a shrew or a vole, a frequent source of annoyance when small mammals are being trapped for faunistic purposes.

In order to obtain his captives, Dr. Crowcroft has modified the Longworth trap and he outlines the provisions which must be made to keep the captured animals in good health until they can be removed since their metabolic rate is extremely rapid and starvation always imminent. His suggestion that the large scent-glands common to the family are an avoidance mechanism explains why a trap which has caught a shrew becomes useless for a while.

There is no doubt that, within the space of a few years' more or less spare time activity, the author has provided a substantial account of the life-history of a fascinating mammal. Most of his work has for some time been available in the journals but we must be grateful for this more sustained endeavour and hope that it will reap its just reward, not only by its sales but also by its speedy emulation with regard to other common but little-known species.

A.H.

The Love-Life of Animals, by Wolfgang von Buddenbrock. Pp. 208, with 24 plates. Frederick Muller Ltd., London, 1957. 25/-.

This translation from the German avowedly purposes to be both didactic and popular and the author apologises in advance for those anthropomorphisms made necessary by his narrative style. In these days when the specialists are active in every branch of science it is both useful and welcome to have an up-to-date synthesis and it is this, with regard to sexual activity, which the author has set out to accomplish.

He begins by reminding us that it is only since 1875 that the internal sexual processes have been at all understood and in the major section of the book, which he terms 'Meeting and Mating' outlines a story which starts with incipient sexuality in the protozoa, elaborates into sexual dimorphism and ends with a discussion of the advantages of being hermaphrodite. Sexual attractions and antagonisms are illustrated by examples from each class and it is to our advantage that quite an amount of continental work on animal behaviour is popularly collated herein for the first time. Similarly in the second part of the book, devoted to the care of the young, although there is much that will be commonplace to the naturalist, there is some novelty of illustration.

It is not, perhaps, remarkable, that as the book progresses, we find that the popular approach increasingly outweighs the didactic. The subject, however, is one with a perennial and general appeal and the more we know concerning the behaviour of lesser animals, the better able are we to understand our own and make allowance for our neighbours, although I doubt if an awareness of the ways of empid flies would inure any damsel of my acquaintance to the calm acceptance of a beautiful but empty chocolate box.

A.H.

Tiger! Tiger!, by William Bazé. Pp. 200 with 15 photographic illustrations. Elek Books, London, 1957. 18/-.

William Bazé, as we remember from his earlier work, *Just Elephants*, spent many years as a hunter in Indo-China. Since tiger-watching has not yet become a sport in its own right, his accounts are mainly episodic and end with a bang. So many tigers are converted into rugs within its pages that there is something of anti-climax in the book as we move from one to the next and witness his downfall from gun, trap or poison. No doubt, like most great predators, the tiger spends the greater part of its life digesting its heavy protein meals but there is much that remains unrevealed; the various pressures which keep the population within optimum limits, for example, territorial needs and the manner in which adolescent animals avoid competition with their parents.

Humanity seems to be lacking in the suggestion that a trapped beast may be left to live until the following day for the purpose of photography but it is possible that many of the criticisms one might level at the book may stem from translation for I am sure that its author did not intend to say that 'The only way of attracting a tiger to the bait at night is by using an electric torch' or that he would subscribe to the footnote which describes the muntjac as 'A small reddish goat which is peculiar in that it has movable horns with which it has been known to cut a dog's head clean off.'

Since the importance of the larger predators becomes increasingly manifest through their near-extirmination, it is to be regretted that M. Bazé's long acquaintance with tigers is expounded from the viewpoint of a Nimrod rather than a naturalist and that the illustrations are almost entirely of the captive or the defunct.

E.H.

Insects, by John Clegg (*True Books Series*). Pp. 144, with 23 figures. Frederick Muller, Ltd. 7/6.

This is quite a good introduction to the widely-varying study of entomology. Structure, metamorphoses, habit and habitat of many orders are dealt with, and a book list for further study is appended. In the earlier chapters a suspicion that the author is 'talking down' to his readers raises the query as to whom the book is intended for. Surely not juveniles, their vocabulary would be insufficient, but those who teach a little of biology, or the older student who wished to survey the subject, would find it useful.

F.H.

Insects on Parade, by **Clarence J. Hylander**. *Young Naturalist Series*. New York and London: The Macmillan Company, 1957. 26/-.

Addressed to the young 'Biologist of To-morrow', this rather pedestrian work, intermediate between a biology text-book and a field guide, surveys briefly the range of North American insect life, summarily describing representative insects from most orders. The photographs are pleasing enough, though few in number, but the numerous line drawings are poor, often producing a caricature of the insect depicted. Your reviewer doubts the utility of importing such volumes, as so many of the species described have no close relative in Britain, while the use of American popular names can only cause confusion. Only a reader with a knowledge of the scientific names could relate these American insects to their nearest British relatives, and he would have advanced far beyond the level at which this book would be useful.

J.H.F.

Gardening in East Africa: A Practical Handbook, by Members of the Royal Kenya Horticultural Society and of the Kenya, Uganda and Tanganyika Civil Services, edited by **A. J. Jex-Blake**. Pp. x + 414 with 23 colour plates. Fourth edition. Longmans, Green & Co., 1957. 45/-.

East Africa for the purposes of this book covers Kenya, Uganda and Northern Tanganyika. Residents live at all altitudes from sea-level to 9,000 ft., and *Gardening in East Africa* was first published over twenty years ago, to meet their varied horticultural requirements. Its continued popularity is sufficient evidence of its success and the new edition is more comprehensive than any of its predecessors, containing in addition to much new and revised matter, twenty-three beautifully executed and reproduced colour plates depicting fifty-three wild flowers of East Africa. As in previous editions numerous East African gardeners have contributed chapters dealing with different topics. These cover annuals, perennials, roses, flowering trees and shrubs, climbers, bulbs, succulents, orchids, water plants, veranda and pot plants, indigenous species, vegetables and fruits in addition to chapters dealing with climate, soils, garden planning, propagation, insect pests and diseases, and chapters devoted specially to coastal gardens and gardening in Uganda and Northern Tanganyika. This handsomely produced book will delight horticulturists in tropical and subtropical regions in general as well as those of East Africa in particular.

Fontana Wild Flower Guide, by **R. S. Fitter**. Pp. 256 with 650 illustrations. Collins. 3/6.

This book has at least two outstanding things in its favour—the pictures which cannot fail to please, and the price. The general arrangement and individual descriptions are not so satisfactory. Grouping plants by flower colour is not a good start for correct identification, while the sub-grouping is more likely to add to the difficulties, especially to one without any previous knowledge of common plants.

Too much space is given to rare plants, space which could well have been used for the common species. There are keys of doubtful value but the descriptions are often so vague that the correct identification of many flowers must be a matter of good guessing.

The distribution of certain species is not very accurate and will certainly add to the general confusion while five pages devoted to the orchids seems excessive.

In spite of this the book is good value for money. The illustrations are excellent and they alone make it one everybody interested in field botany will be glad to have and which beginners should find very useful.

C.M.R.

Sea Angler's Fishes of New Zealand, by **Arthur W. Parrott**. Pp. 176. Hodder & Stoughton. 18/-.

This is a book of rather local interest to New Zealand and to some extent to Eastern Australia. It figures 56 fishes for the sea-angler and gives brief descriptions of them, along with Maori names, common names, or suggested common names. Fish of commercial importance are indicated by statistics from Marine Department reports. There are, a glossary of technical terms, lists of scientific and other names, of average and maximum sizes, and an adequate index. Among the plates is one showing a tame snapper being handled.

E.P.

Coarse Fishing To-day, by Cyril Smith. Pp. 128. Richard Bell, 1957. 9/6.

The fishing described in this book is principally concerned with roach, bream, dace and chub. The predatory fish are barely mentioned. There are chapters on tackle, bait and modern methods. The author succeeds admirably in portraying the modern outlook and showing up the inherent defects of the older types of angling. He is clearly an enthusiast with a desire to achieve mastery and can teach much to all except the very best of anglers.

H.H.

Wild Brother, by Mary Patchett. Pp. 190. Collins, *Fontana Books*. 2/6.

This is a cheaper edition of a book first published in 1954. It tells the tale of a pair of dingoes, those feral dogs of the Australian outback whose depredations among the golden fleeces are allegedly such that no device has been neglected to encompass their destruction and whose survivors are held, credibly enough, to be endowed with a surpassing cunning.

Warrigal and Shula, imbued with a constancy remarkable in any but fictional canines, slink through adventure after escapade. That the author's sympathies lie with the dingoes is fairly manifest throughout but the removal from the scene of their chief antagonist, Frank, a trapper, by the agency of a death adder while seeking to destroy a cub is perhaps a little harsh. It is only fair to state that I could find no word in the text of the 'great wedge-shaped eagle' which is one of the proffered delights of the cover citation. Miss Patchett knows much better than that.

E.H.

Filmstrips: Fishing. 27 frames, 15/- with notes. **Insects of Ponds and Streams.** 39 frames, 15/- with notes. Educational Productions Ltd., East Ardsley, Yorks.

The strip on fishing is of more interest to the geographer than to the biologist, though it would provide elementary background material for a talk on this branch of economic biology. The frames include maps to show the world's chief fishing grounds, and the movements of herring shoals, diagrams to illustrate the chief methods of fishing, with photographs to illustrate the catching, sale and transport of the fish. The filmstrip is suitable for both junior and senior audiences and the pictures are generally good. The notes are adequate, but might profitably be fuller.

Insects of Ponds and Streams consists of a series of photographs to illustrate the life histories of about ten types of aquatic insect, viz. beetles, bugs, caddis-flies, damsel-flies, dragon-flies, alder fly, mosquito and hover-fly. The pictures are usually clear, and together with the notes will provide an introduction to this branch of limnology. The photographs will be of interest both to school classes of all ages and to adult natural history society members. The notes are written in non-technical language.

Ornithological Report for Northumberland and Durham for 1956, by G. W. Temperley. 3/6.

This excellent, 50-page report is well printed and spaced and covers weather conditions in the year, details of ringing, 'classified list,' and an article by E. A. R. Ennion on 'Drift Migration on the East Coast in early September 1956.' Yorkshire ornithologists will find the report additionally interesting for comparative purposes.

Records of Caddis Flies (Trichoptera) in Northumberland with Notes on the Seasonal Distribution in Plessey Woods, by G. N. Phillipson. 2/6.

Copies of these *Transactions of the N.H.S. of Northumberland, Durham and Newcastle-on-Tyne* can be obtained from the Society, and from the printers, W. L. Large & Sons, Ltd., Newcastle-on-Tyne.

CORRECTION

The statement on p. 106 that the rare fossil echiniod from Haw Bank Quarry, Skipton was found by Mr. S. Illingworth should read. Mrs R. L. Illingworth.

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Yorkshire Naturalists' Union.

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Hon. General Secretary :

K. G. PAYNE, B.Sc., West Dene, Manor Heath, Copmanthorpe, York.

SUBSCRIPTIONS

Will all members please note that subscriptions for 1957 are now due and should be sent to Mr. Shaw at the address given above.

VERTEBRATE SECTION SPRING MEETING.—There will be a meeting of the Vertebrate Section at 2.45 p.m. on Saturday, March 16th, in **St. John's Parish Room, Mark Lane, Leeds.** The following will be included:

Report for 1956 by **G. H. Ainsworth, Hon. Secretary of Spurn Bird Observatory.**

Ornithological Report for 1956 by **R. Chislett.**

Deer in Britain by **G. K. Whitehead, Esq.** Illustrated by slides and colour film.

To Scandinavia for Birds by **M. D. England, Esq.** Illustrated by colour films.

SPRING ENTOMOLOGICAL MEETING.—There will be a meeting of the Entomological Section at 2.30 p.m. on March 23rd in the **Tolson Memorial Museum, Ravensknowle Park, Huddersfield,** by kind permission of the Director, **Mr. E. W. Aubrook.** A film strip on the **Purple Emperor Butterfly** will be shown by **Mr. G. E. Hyde,** and there will be an exhibition of specimens to which members are asked to contribute. Tea and light refreshments are available at the Museum's cafe.

THE 13TH SPRING FORAY OF THE MYCOLOGICAL COMMITTEE will be held at **Thornton-le-dale** from April 11th to 15th, 1957.

Chairman :

A. D. GREENWOOD, Esq., B.Sc., Botany Department, The University, Leeds, 2.

Secretary :

Miss J. GRAINGER, Wilshaw, Meltham, Huddersfield. (Telephone: Meltham 352.)

HEADQUARTERS.—Warrington House, Thornton-le-Dale (Miss K. M. Maidment). Terms, 18/- per day, including the use of the workroom. Will members

please write direct to **Miss Maidment** to book accommodation. Other accommodation is available at £1/1/- per day but anyone not staying at Warrington House will incur a charge of 2/6 per day for the use of the workroom there.

Anyone wanting particulars of alternative accommodation should write to **Miss J. Grainger** (address above).

MICROSCOPES AND BOOKS.—Members should bring their own microscopes and books. Owing to transport difficulties it may be difficult to bring a full selection of the necessary books and apparatus. In case of difficulty, members should write to the Secretary who will endeavour to find out what private transport is available.

MAPS.—No. 92, Ordnance Survey, New Series, No. 22 in Old Series.

The places previously chosen for the 1957 Mycological Meetings proved to be inconvenient from the point of view of dates, but are booked tentatively for 1958. Several regular foray members thought that this visit to Thornton-le-Dale, after an interval of five years, would be beneficial.

BRYOLOGICAL FIELD MEETING AT ABERFORD, SATURDAY, APRIL 27th, 1957.

All members interested should meet at **Aberford** bus terminus (**White Swan**) at 10-45 a.m. The bus leaves the West Yorkshire bus station, **Vicar Lane, Leeds**, at 10-10 a.m. Buses return from **Aberford** at 4-43, 5-50, 6-20, 6-55 and 7-25 p.m. Lunch should be carried.

Further information may be had from **Mr. G. A. Shaw**, Botany Department, The University, Leeds, 2.

Yorkshire Naturalists' Union.

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P. H. HOLMES, Esq., M.A.

Hon. Treasurer :

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G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary :

K. G. PAYNE, A.R.C.S., B.Sc., West Dene, Manor Heath, Copmanthorpe, York.

Divisional Secretary :

Miss CHRISTINE SHADDICK, M.A., Craigens, Dawcross, Harrogate.

SUBSCRIPTIONS

Will all members please note that subscriptions for 1957 are now due and should be sent to Mr. Shaw at the address given above.

The 555th Meeting

WILL BE HELD AT

PATELEY BRIDGE

V.C. 64

on Saturday, MAY 25th, 1957

HEADQUARTERS AND MEETING.—The King's Arms, High Street, Pateley Bridge. Proprietors: Mr. and Mrs. Arnold. Tea will be served at 5-0 p.m., and will be followed at approximately 5-45 p.m. by a short meeting for the presentation of reports and the election of new members. Ham, tongue and salad tea, 5/6; Afternoon tea, 2/6. Please order from Mrs. Arnold by 22nd May.

MEET.—At Headquarters at 11-15 a.m. Details of the route to be followed by the main party will be left at Headquarters for late arrivals.

TRANSPORT.—A bus leaves Harrogate Bus Station at 10-15, arriving at Pateley at 11-10. Return buses leave Pateley for Harrogate half-hourly at a quarter-to and a quarter-past the hour. There are good train and bus services to Harrogate from Leeds, Bradford, York, Ripon and Middlesbrough. (Buses also leave Ripon

for Pateley at 9-5, arriving at 9-54. There is a return bus from Pateley at 7-30 p.m. due at Ripon 8-29.)

MAP.—Ordnance Survey 2½ inch map, No. 44/16.

THE AREA.—Situated at the entrance to Upper Nidderdale, Pateley Bridge lies on the Millstone Grit. It is, however, hoped to explore gills running up towards Greenhow, which cross over on to the limestone and thus afford interesting contrasts of habitat. Spoil heaps from old lead mines are of special interest to botanists. Entomologists should note the large colonies of Wood Ants in Merryfield Glen, and search could well be made for similar colonies in neighbouring gills.

A few miles up the dale lies Gouthwaite Reservoir, which is of special interest to ornithologists. In May its interest is likely to vary in inverse ratio to the height of the water and migrant waders can be expected if there is a good exposure of mud. The gills and rocks above the reservoir should provide Ring Ouzels and may produce some interesting predators.

PREVIOUS MEETINGS.—The Union visited Pateley Bridge twice in the nineteenth century—in 1885 and 1886. The last full meeting of the Union there took place in June 1919. Ramsgill, at the head of Gouthwaite, was however visited in 1938, and the Mycological Section visited Pateley in Autumn 1955.

Next Meeting.—The Whitsun week-end Meeting at LEYBURN, Saturday, 8th June, till Monday, 10th June.

Yorkshire Naturalists' Union.

President :

P. F. HOLMES, Esq., M.A.

Hon. Treasurer :

M. M. SAYER, Esq., 10 The Gardens, Heath Road, Halifax.

Assistant Hon. Treasurer and Membership Secretary :

G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary :

K. G. PAYNE, A.R.C.S., B.Sc., West Dene, Manor Heath, Copmanthorpe, York.

Divisional Secretary :

Miss C. M. ROB, F.L.S., Catton Hall, Thirsk.

SUBSCRIPTIONS

Will all members please note that subscriptions for 1957 are now due and should be sent to Mr. Shaw at the address given above.

The 556th Meeting

WILL BE HELD AT

LEYBURN

V.C. 65

From Saturday, JUNE 8th, to
Monday, JUNE 10th, 1957

HEADQUARTERS.—The Golden Lion Hotel, Market Place, Leyburn. Mr. F. McQuirk. Terms: Bed and Breakfast, 15/6; Packed Lunch, 3/6. High Tea, 6/6. Other accommodation may be had at the Black Swan Hotel at £1 per day, and the Wensleydale Private Hotel at 25/- per day. As there is only a limited amount of accommodation available, members are advised to book as early as possible, saying that they are attending the Union Meeting.

TRANSPORT.—The railway service to Leyburn has been withdrawn. The United Buses run from Ripon, Northallerton and Darlington, but the summer time-table is not yet available, and members are advised to write to the United Bus Office, Middlesbrough, if any difficulty in getting the Bus times is experienced. At no time is there a frequent service up the vale.

MAPS.—The One-Inch Ordnance Map (New Popular Edition), No. 90, Askrigg and Settle, and No. 91, Ripon, cover the area it is hoped to visit.

PERMISSION.—Lord Bolton has given permission for his extensive estate and permits for other areas have been applied for.

MEET.—Headquarters, 7-0 p.m., Friday, June 7th, when the routes chosen will be announced. The uncertain petrol situation makes it impossible to publish these in advance. The party will leave Headquarters each day as near 10-15 a.m. as possible, depending on the times of the buses.

PREVIOUS MEETINGS.—The Union visited Leyburn in 1888, 1898 and 1931. The report of the last of these, in particular, should be consulted in the number of *The Naturalist* concerned for detailed information.

THE AREA.—Wensleydale proper begins at Leyburn, and there is plenty of ground to explore without going very far afield. The wooded escarpment of the Shawl has been much quarried, and it is hoped that permission will be forthcoming to visit these and also some disused quarries between the railway and Harmby. The woods on the Bolton Estate are particularly fine, with larches and sycamores of considerable size. There are some interesting old lead workings at Calamine House, while the small side valleys of the Dale are always worth visiting.

Lord Bolton has asked particularly that there should be no disturbance of game, and that all gates should be shut. No dogs allowed.

Next Meeting.—Stainborough, V.C. 63, on Saturday, June 22nd.

Yorkshire Naturalists' Union.

President:

P. F. HOLMES, Esq., M.A.

Hon. Treasurer:

M. M. SAYER, Esq., 10 The Gardens, Heath Road, Halifax.

Assistant Hon. Treasurer and Membership Secretary:

G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary:

K. G. PAYNE, B.Sc., West Dene, Manor Heath, Copmanthorpe, York.

Divisional Secretary:

Miss J. GRAINGER, Wilshaw, Meltham, Huddersfield.

Local Secretary:

R. S. ATKINSON, Esq., 46 White Hill Avenue, Barnsley.

The 557th Meeting

WILL BE HELD AT

STAINBOROUGH

V.C. 63

on Saturday, JUNE 22nd, 1957

HEADQUARTERS.—The Strafford Arms Hotel, Stainborough, near Barnsley. Proprietor: Mr. C. Massey. Tea will be served at 4-30 p.m. and will be followed by a short meeting for the presentation of reports. Meat tea, with salad, brown and white bread and butter and trifle, 5/-; plain tea, with jam, etc., 3/-. Teas must be ordered by June 15th, and **no teas will be served on the 22nd which have not been ordered beforehand.**

TRANSPORT.—The Yorkshire Traction Co. runs buses to Stainborough on Saturdays, departing from the Bus Station at 10-40 a.m., 12-10 p.m. and 1-40 p.m.: Route 64. These buses return from Stainborough at 5-0 p.m. and 6-30 p.m.

The Stocksbridge Circular, Route 84, leaves the Bus Station from a stand near the enquiry office at 15 minutes past each hour. This passes through Stainborough and members should alight at the Strafford Arms. Return is from Stainborough at 33 minutes past the hour.

MEET.—It is suggested that those able to arrive in the morning should meet at 11-0 a.m. and the afternoon party at 2-30 p.m. Members of the Barnsley Naturalists' Society will act as guides.

PERMITS.—The Wentworth Castle Estate Office has given permission to enter the woodlands on the understanding that no damage will be done and that the rights of tenant farmers will be respected. The Principal of the Wentworth Castle Training College has given permission for members to visit the Serpentine and other parts of the college grounds. They are asked to carry some proof that they are there with permission, e.g. Membership Cards.

The following notes have been compiled by members of the Barnsley Naturalists' Society (Secretary: R. S. Atkinson, F.Z.S.).

THE AREA.—Stainborough lies about two miles south-west of Barnsley and is typical of an old country estate. Wentworth Castle, now a Training College owned by Barnsley Education Committee, was in 1730 the seat of Thomas Wentworth, Earl of Strafford. The grounds include the rhododendron gardens, many fine avenues of trees and the much reduced Serpentine, once a large ornamental water. Unfortunately, much of the adjoining woodland has been the scene of opencast coalmining, so that little remains of the once beautiful Rockley Woods. In spite of all this, however, the district is well worth visiting.

ORNITHOLOGY (D. Ashurst).—In the college grounds there is a large and steadily increasing jackdaw colony. Many breed in the masonry of the old ornamental castle, others in tall trees near the Serpentine bridge. Swallows, House Martins, Green and Greater Spotted Woodpeckers also breed in the grounds. In the Rockley Woods, Wood-Pigeon, Tree-Creeper and Jay are common and the Grasshopper Warbler has been heard on several occasions in dense undergrowth. Magpies seem to be on the increase. The Great Crested Grebe, Moorhen and Mute Swan breed regularly at Worsborough Reservoir though the nests are constantly interfered with. Kingfishers breed in the banks of the River Dove and Herons feed at the deeper end of the Serpentine. Other birds of the area include the Woodcock, Lapwing, Redshank, Common Partridge, Yellow Wagtail, Little Owl, Mallard and Willow-Tit.

BOTANY.—The flora is typical of the coal measures and has the usual woodland, grassland and marshland associations. The species of Balsam (Impatiens) which occur at the Rockley end of Worsborough Reservoir are worth investigating.

FRESHWATER BIOLOGY.—The Serpentine has the usual aquatic plant and animal life. At its southern end the water being deeper and less sheltered, there is much less variety.

MAMMALS, REPTILES AND AMPHIBIA (A. H. Hindley).—The Fox is very common and Badgers have been reported on several occasions; one was caught on an opencast mining site. Red Squirrels occur in the woods and the nest of the Harvest Mouse has been found in a wheat field near Rob Royd. The Brown Hare and Rabbit occur and the old bloomery ruin at Rockley was the place where the late Arthur Whittaker studied the bats of the area. The Grass Snake has been taken alive at Stainborough and near Worsborough Reservoir, and a Common Lizard was captured between Gilroyd and Stainborough. The Common Frog, Toad and Smooth Newt are present at Rockley Dam and elsewhere.

LEPIDOPTERA (J. H. Seago, B.Sc.)—RHOPALOCERA: The area is rather poor as far as butterflies are concerned, but those listed below will probably be met with if the day is good:

D. megera, *C. pamphilus*, *P. icarius*, *C. argiolus*, *L. phlaeos*, *P. brassicae*, *rapae* and *napi*, *E. cardamines*, *O. venata*.

A sharp lookout should be kept for *C. rubi*, *E. tages* and *P. malvae*, all of which have recently been extending their ranges in the Barnsley area. *E. tages* particularly favours old shale heaps in this area.

HETEROCERA: The moths of the district have been little investigated of recent years, but the area is undoubtedly a good one and among the species known to occur and likely to be on the wing in June may be mentioned:

D. porcellus, *D. elpenor*, *S. ocellatus*, *L. populi*, *P. gnoma*, *H. jacobaeae*, *P. fuliginosa*, *C. mendica*, *S. lutea*, *S. lubricipeda*, *C. umbratica*, *H. corspersa*, *E. mi*, *P. moneta*, *P. gamma*, *P. chrysitis*, *P. festucae*, *A. sylvata*, *L. marginata*, *Z. filipendulae*, *Z. lonicerae*, *P. statice*, *Z. pyrina*, *T. bembeciformis*.

The area under investigation merges with the one featured on Circular 494 of May 21st, 1949, when Worsborough Reservoir was visited.

MAP.—The best map is Sheet 44/30 in the 2½-inch Edition. The One-Inch Edition is Sheet 102, Huddersfield.

Next Meeting.—Fimber or Bishop Wilton on Saturday, July 6th.

Yorkshire Naturalists' Union.

President :

P. F. HOLMES, Esq., M.A.

Hon. Treasurer :

M. M. SAYER, Esq., 10 The Gardens, Heath Road, Halifax.

Assistant Hon. Treasurer and Membership Secretary :

G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary :

K. G. PAYNE, B.Sc., West Dene, Manor Heath, Copmanthorpe, York.

Divisional Secretary :

Miss F. E. CRACKLES, B.Sc., 143 Holmegarth Drive, Bellfield Avenue, Hull.

The 558th Meeting

WILL BE HELD AT

BISHOP WILTON

V.C. 61

on Saturday, JULY 6th, 1957

HEADQUARTERS AND MEETING.—The Fleece Inn, Bishop Wilton. Mrs. Beal. (Telephone: Bishop Wilton 251.) Tea will be served at 5 p.m. Ham and salad, 4/6. Because of supply difficulties, it is necessary to know the number requiring tea a week in advance. Please write to or telephone Mrs. Beal before June 29th.

A short meeting to hear reports on the day's work will follow tea.

MEETING PLACE.—The Fleece Inn at 11-0 a.m.

TRANSPORT.—There is a none too good 'bus service:

Piccadilly, York	8-30 a.m. (Baileys)	10-30 a.m. (E. Yorks.)
Bishop Wilton	9-30 a.m.	11-30 a.m.
Pocklington	9-10 a.m. (E. Yorks.)	10-10 a.m. (Baileys)
Bishop Wilton	9-30 a.m.	11-30 a.m.

RETURN:

Bishop Wilton	4-30 p.m.	8-30 p.m. (E. Yorks.)
York	5-25 p.m.	9-25 p.m.
Bishop Wilton	6-25 p.m.	7-25 p.m. (E. Yorks.)
Pocklington	6-45 p.m.	7-45 p.m.

'Bus times should be checked nearer the time of the meeting. Summer time-tables were not available at the time of going to press.

PREVIOUS MEETINGS.—Previous Y.N.U. meetings held in the area were:

- (1) At Pocklington for Great Givendale, Huggate Dike, Kilnwick Percy, Millington and Warter. 1885.
- (2) Pocklington for Great Givendale. 1905.

The Union does not appear to have visited Bishop Wilton previously and records for the area appear scarce. It is hoped that as many as possible, representing as many sections as possible, will attend the meeting.

PERMISSION.—Lord Halifax has kindly given permission for the Union to visit parts of his estate. It is requested that members will see that all gates are shut and that the presence of growing crops should be fully respected. No dogs are allowed.

THE AREA.—Bishop Wilton is near the western edge of the chalk wolds. A valley with steep sides lies to the north-east of the village; an old chalk quarry here and the steep valley sides are likely to be the more interesting botanically. In the vicinity also is some scrubland and some delightful undulating park land and in the valleys, springs, a little marshy land and small streams.

FLOWERING PLANTS.—From visits paid in May of this year it is impossible to assess the botanical interest of the area. However, in the old quarry near the Manor House many plants of *Cirsium eriophorum* (L.) Scop (Woolly Headed Thistle) were noted. Other chalk loving plants were also found to be frequent here and/or on the valley sides—notably Carline Thistle, Rock Rose, Salad Burnet, *Carex caryophyllaea* Latour and *Hieracium pilosella* L.

Saxifraga tridactylites L. was found to be frequent in an arable field above the valley.

The following are among the lime-loving plants recorded elsewhere on the wolds: *Clinopodium vulgare* L. (Wild Basil), *Campanula glomerata* L. (Clustered Bell Flower), *Atropa belladonna* L. (Deadly Nightshade), *Filipendula vulgaris* Moench (Dropwort), *Geranium columbinum* L. (Long-stalked Cranesbill), *Picris hieracioides* L. (Hawkweed Oxtongue), *Verbascum thapsus* L. (Great Mullein), *Blackstonia perfoliata* (L.), Huds. (Yellow-wort) and *Galeopsis angustifolia* Hoffmann (Red Hemp Nettle).

Asperula cynanchia (Squinancy Wort) is recorded for the chalk wolds at Langton; *Hippocrepis comosa* L. (Horse Shoe Vetch) for Langton and Waterdale and *Astragalus danicus* Retz (Purple Milk Vetch) for Langton, Sherburn and Brandesburton.

For woods of the area, the following records are of interest: *Paris quadrifolia* L. (Herb Paris) at Nunburnholme, *Calamagrostis epigeios* (L.) Roth at Nunburnholme and Pocklington and *Vicia sylvatica* L. at Pocklington.

LEPIDOPTERA.—F. Hewson: This should be a good meeting for us, the 'Skippers' flying, and *Polyommatus icarus* (Common Blue) and *Ectypa glyphica* (Burnet Companion) still about. Burnets may possibly be found in numbers, and are a group which deserves much closer study than we usually give it. It must not be forgotten that *Agapetes galathea* (Marbled White) sometimes turns up near here, in fact quite a number of interesting species may be out.

NEXT MEETING.—Goathland, V.C. 62, week-end July 12th-14th.

Yorkshire Naturalists' Union.

President :

P. F. HOLMES, Esq., M.A.

Hon. Treasurer :

M. M. SAYER, Esq., 10 The Gardens, Heath Road, Halifax.

Assistant Hon. Treasurer and Membership Secretary :

G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary :

K. G. PAYNE, B.Sc., West Dene, Manor Heath, Copmanthorpe, York.

The 559th Meeting

WILL BE HELD AT

GOATHLAND

V.C. 62

From Friday evening, JULY 12th,
till Sunday, JULY 14th, 1957

HEADQUARTERS.—The Grange Hotel, Goathland, York: proprietors, Miss D. E. Cherrett and Mrs. A. Wright. (Telephone: Goathland 210.) Terms are 27/6 to 30/- a day, 17/6 per night, bed and breakfast. Other accommodation includes The Goathland Hydro: proprietor, Mr. E. N. Burn. (Telephone: Goathland 202.) Terms, 30/- to 35/- per day, and The Goathland Hotel: proprietors, Mr. and Mrs. Welford Smith. (Telephone: Goathland 203.) Terms, 26/6 per day for three or more days, from 17/6 per night, bed and breakfast.

TEA AND MEETING.—Tea at The Grange Hotel at 5.0 p.m. on Sunday, 14th July, will be followed by a meeting for the presentation of Sectional Reports, etc. Afternoon Tea will be 2/6 and High Tea (ham, salad, fruit and cream, cake, etc.) 6/6. **Members wanting tea must notify Miss Cherrett and Mrs. Wright by Wednesday, July 10th at the latest, stating which tea they require.**

TRANSPORT.—Goathland is on the British Railways and West Yorkshire bus routes from York, Leeds and Bradford to Whitby and is, of course, readily reached by car.

PROGRAMME.—Members should meet at Headquarters at 10.15 a.m. on Saturday and Sunday. No precise programme will be decided ahead as the most convenient arrangements will depend upon the amount of private transport and number of drivers available. Broadly, the main intention is to examine Newtondale above Levisham (including Fen Bog) and the Rutmoor Beck, Esp Rigg, Blaworth

Beck area on the north of Pickering Moor. It is hoped that we shall have with us Mr. Bartlett of the Forestry Commission, who knows much of this area very well.

Many other interesting spots are easily accessible from Goathland, especially to members with cars. Members will not need to be reminded of The Hole of Horcum, and its Cornus, near Saltersgate, and Randy Mere and the boggy ground near it may repay some attention.

May Moss should be very worthy of a visit. This and Fen Bog are the best bogs in North-east Yorkshire, and it should be noted that they may be very soft and wet indeed. May Moss, lying on Allerston High Moor, about $1\frac{1}{4}$ miles north of Saltersgate and $1\frac{1}{2}$ miles east of the Whitby road, is in the military area and it is not yet known whether safe access to it can be obtained.

Dalby Marsh (Thornton Dale) is another locality worthy of attention from any members having time. *Drosera anglica* Huds. and *Cirsium heterophyllum* (L.) Hill were among the species recorded at the 1941 (Pickering) meeting.

MAPS.—The area is covered by the Ordnance Survey 1" Sheet, No. 92. It will be found too that the $2\frac{1}{2}$ " Sheet, No. SE. 89 is very useful.

PERMISSION.—We are indebted to The Forestry Commission (per Mr. T. V. Dent, in York) for permission to go on land owned by them. Members are reminded of the risk of fire, present whenever vegetation is dry, and are asked to exercise the greatest care and, if possible, to refrain from smoking under these conditions.

PREVIOUS MEETINGS.—The Union has previously been at Goathland in 1903 (June 27th), 1906 (August 4th) and 1954 (July 3rd). In addition, it was at Pickering in 1886, 1895, 1929 (May 18th), 1938 (June 4th), 1941 (August 2nd) and 1956 (July 1st).

The accounts of the 1886, 1895 and 1941 meetings are worth consulting in *The Naturalist* for those years. That of the 1895 meeting is by W. Denison Roebuck and comprises pages 203-212. It is interesting to note that 50-60 members were present and from as far afield as Huddersfield and Sheffield. A surprising inclusion in this report is a record of *Saxifraga hypnoides* from the Saltersgate area.

The 1938 *Naturalist* includes an account of geology, including The Hole of Horcum.

THE AREA.—The rather large and scattered village of Goathland with houses standing back from the roads behind stretches of grass grazed by sheep lies two or three miles off the main Pickering-Whitby road but is well known to motorists and to coach parties nowadays. It stands, in the main, at around 500' O.D. on the moor, and the deep wooded valleys of West Beck and Eller Beck, joining to form the Murk Esk and containing the well-known falls Nelly Ayre Force, Mallyan Spout and Thomason Force are nearby and form a strong contrast. West Beck is fed from the south by Wheeldale Beck with Rutmoor and Blaworth Becks among its branches and from the west by Wheeldale Gill rising six miles to the west at 1,300' O.D. in the Cock Heads Bogs of Glaisdale Moor. Fen Bog lies about the watershed between Eller Beck and Pickering Beck and near the railway at the head of Newtondale. Upper Newtondale, west of the railway, comprises Forestry Commission land, and (in the opinion of the writer) the scenic effect of the planting here is very good and enhances the striking natural features of the dale.

Much of interest regarding the area is to be found in Baker's *North Yorkshire and Elgee's Moorlands of North-eastern Yorkshire*. A series of articles on the natural history of Goathland were published in *The North-Western Naturalist* between 1939 and 1942 (see Circular for 1954 meeting).

BOTANY.—The following are among the plants recorded: *Angallis tenella* (L.) Murr. (Bog Pimpernel); *Andromeda polifolia* L. (Bog Andromeda); *Carex Pauciflora* Lightf., the sedges probably have been worked inadequately; *Chamaepericlymenum* (Cornus) *suecicum* Aschers & Graebn. (Dwarf Cornel); *Cirsium heterophyllum* (L.) Hill (Melancholy Thistle); *Corydalis claviculata* (L.) DC. (White Climbing Fumitory); *Drosera anglica* Huds. (Great Sundew); *Epilobium pedunculare* A. Cunningham;

Eleocharis pauciflora (Lightf.) Link ('Few-flowered Spike-rush'); *Equisetum hyemale* L. (Dutch Rush); *Gaultheria shallon* Pursh; *Genista anglica* L. (Petty Whin); *Inula conyza* DC. (Ploughman's Spikenard); *Juniperus communis* L. (Juniper); *Listera cordata* (L.) R.Br. (Lesser Twayblade); *Myrica gale* L. (Bog Myrtle), in great quantity over boggy areas; *Myriophyllum verticillatum* L. ('Whorled Watermilfoil'), 'in large masses in stream by the railway' (Fen Bog); *Narthecium ossifragum* (L.) Huds. (Bog Asphodel), in plenty about Fen Bog and other boggy areas; *Oxycoccus palustris* Pers. (Cranberry), probably in numerous boggy spots; *Parnassia palustris* L. (Grass of Parnassus); *Potentilla palustris* (L.) Scop. (Marsh Cinquefoil); *Pyrola media* Sw. (Intermediate Wintergreen); *Rhynchospora alba* (L.) Vahl. (White Beak-sedge); *Schoenus nigricans* L. (Bog-rush); *Eleogiton fluitans* (L.) Link ('Floating Scirpus'); *Serratula tinctoria* L. (Saw-wort); *Trientalis europaea* L. (Chickweed Wintergreen) and *Triglochin palustris* L. (Marsh Arrow-grass).

LEPIDOPTERA.—F. Hewson: No doubt the most interesting species here is *Coenonympha tullia* (Large Heath), which according to Professor Heslop Harrison is of a mixed race including *scotica* but not *philoxenus*. Moths which may be on the wing include *Nudaria mundana* (Muslin Footman), *Apatele menyanthidis* (Light Knotgrass), *Plusia interrogationis* (Scarce Silver Y), *Parastichtis suspecta* (Suspected), *Ecliptoptera silaceata* (Small Phoenix) and *Geometra papilionaria* (Large Emerald). Larvae to be looked for include those of *Cerura bicipis* (Alder Kitten), *Epirrhoe tristata* (Small Argent and Sable) and *Parasemia plantaginis* (Wood Tiger) with the variety *hospita*.

REPORTS ON MEETINGS.—It is specially asked that all Recorders and other members having contributions to the reports on the Union's field meetings should send them to the General Secretary **as soon as possible** after the meeting concerned. Especially, reports on this Goathland meeting will have to be sent in straight away, if they are to be in time for the October *Naturalist*.

Yorkshire Naturalists' Union.

President :

P. F. HOLMES, Esq., M.A.

Hon. Treasurer :

M. M. SAYER, Esq., 10 The Gardens, Heath Road, Halifax.

Assistant Hon. Treasurer and Membership Secretary :

G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary :

K. G. PAYNE, B.Sc., West Dene, Manor Heath, Copmanthorpe, York.

The Autumn Fungus Foray

WILL BE HELD AT

AUSTWICK

V.C. 64

From Friday evening, September 20th
till Tuesday, September 24th, 1957

MYCOLOGICAL COMMITTEE

Chairman :

A. D. GREENWOOD, Esq., B.Sc.

Secretary :

Miss J. GRAINGER, Wilshaw, Meltham, Huddersfield. (Tel. Meltham 352.)

Recorders :

Miss E. M. BLACKWELL, Woodsome Lees, Kirkburton, Huddersfield.

W. G. BRAMLEY, Esq., East Villa, Eastfield Road, Pickering.

Dr. J. GRAINGER, West of Scotland Agricultural College, Auchincruive, Ayr.

HEADQUARTERS.—The Traddock, Austwick (via Lancaster) (Mrs. J. BURNISTON—Tel. Clapham 224).

Terms, including bed, breakfast, packed lunch (except Sunday), and evening meal, are:

17s. 6d. per day for shared rooms, and

21s. per day for single rooms.

Members should write direct to Mrs. BURNISTON.

A workroom will be available.

THE CHAIRMAN'S ADDRESS.—"Some Observations on Water Moulds" will be delivered by Mr. A. D. GREENWOOD, B.Sc., on **Saturday, 21st September**, prior to the ANNUAL MEETING.

THE AREA.—The area to be worked will be largely the same attractive ground as covered eight years ago, and, doubtless, interesting comparisons will be made.

AUTUMN BRYOLOGICAL EXCURSION.—The Bryological section will take advantage of the Ramblers' Special train from Leeds to Tebay on Sunday, 22nd September, 1957, to investigate a portion of the upper Lune Valley. Depending on the time available, it is proposed to leave the train at either Sedbergh or Low Gill. In the latter case it is hoped to work the Yorkshire side of the Lune to the Westmorland boundary at Carlin Gill, and possibly Carlin Gill to Black Force. Meals should be carried. Train times are not yet available, but these will be notified to those interested. Further information from G. A. Shaw, Botany Dept., The University, Leeds 2.

All members interested in Mosses will be welcome.

SECTIONAL MEETINGS, 1957.

SEPTEMBER 28th.—**The Botanical Section** will meet in the BOTANICAL DEPARTMENT, LEEDS UNIVERSITY, at 2-30 p.m. Entrance is *via* The Baines Door from University Road. After tea there will be an exhibition of specimens to which members are invited to contribute.

(A further circular will give details of the remaining Sectional Meetings).

Yorkshire Naturalists' Union.

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G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary:

K. G. PAYNE, B.Sc., West Dene, Manor Heath, Copmanthorpe, York.

Sectional Meetings, 1957

for consideration of the Annual Reports and to nominate Officers for the Sections and their Committees.

October 5th.—The **Conchological Section** will meet at 2-30 p.m. in the Leeds City Museum, Park Row, Leeds.

October 12th.—The **Vertebrate Section** meetings will be held in the St. John's Parish Room, Mark Lane, Leeds 2 (behind Lewis's Ltd.). The programme will be as follows:

2-15 p.m., **Protection of Birds Act Sub-Committee.**

2-45 p.m., **Ornithological Division** (for the election of Officers, etc).

3-00 p.m., **Mammals, Reptiles, Amphibians and Fishes Division** (for the election of officers, etc.)

3-15 p.m.—**Vertebrate Section.**

The business from 3-15 p.m. onward will include the following:

Interim Report of **Spurn Observatory and Ringing Sub-Committee** by **G. H. Ainsworth.**

Interim Report of **Ornithological Division**, by **R. Chislett.**

Election of Officers for 1958.

"**Birds of the Tees Estuary**", by **Philip J. Stead.**

October 19th.—The **Entomological Section** will meet in the Leeds City Museum, Park Row, at 2-30 p.m. In addition to the business meeting there will be an exhibition of specimens, to which members are invited to contribute. Cups of tea will be available at a small charge, and members should bring their own food. Members of the **Freshwater Biology Committee** will be very welcome.

November 2nd.—**Executive Committee Meeting** in the University of Leeds.

December 7th.—**Annual Meeting of the Union in York.**

THE LAPWING IN BRITAIN

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Natural History for the North of England

EDITED BY
W. A. SLEDGE, Ph.D., B.Sc.,
THE UNIVERSITY, LEEDS,

with the assistance as referees in special departments of

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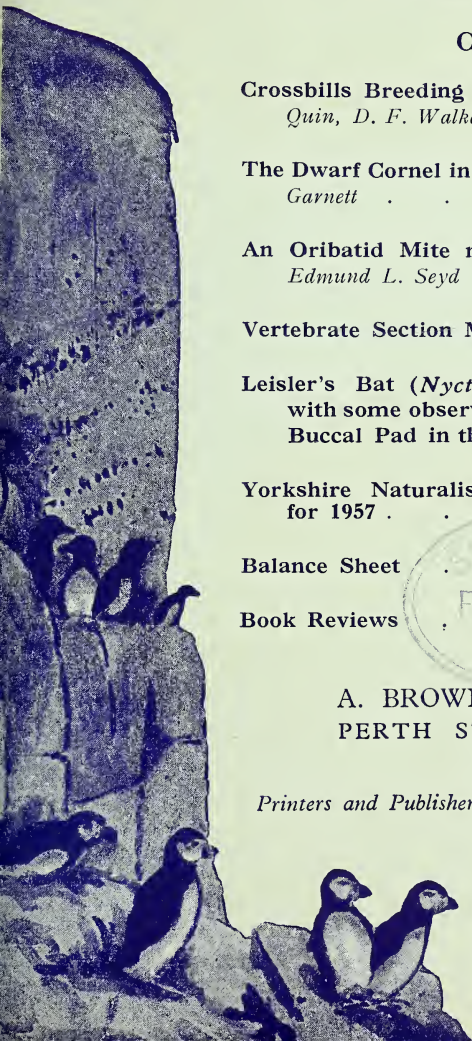
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THE NATURALIST

FOR 1958

CROSSBILLS BREEDING IN YORKSHIRE IN 1957

P. C. QUIN, D. F. WALKER AND R. F. DICKENS

On Sunday, April 14th, 1957, at approximately 11-30 a.m., P.C.Q. and R.F.D. heard what they were convinced were calls of Crossbills (*Loxia curvirostra*) in an area of mixed woodland in upper Wharfedale. Both observers are familiar with the call, but as the two birds which flew over towards a belt of conifers were seen only briefly, in flight, and silhouetted against the light, details sufficient for absolute identification were not obtained. The birds were again heard calling among the larch, spruce and pine trees of which the conifer belt consisted, but no views were obtainable here and the birds eventually left the immediate neighbourhood. A half-hour search failed to provide any further sign of Crossbills and as about 30 Bramblings (*Fringilla montifringilla*) were also seen in the area, it was considered that the Crossbills might have been merely passing birds.

Returning at 17.30, these two observers met D.F.W., who also thought he had heard Crossbills in the same wood; so the three decided to continue watching the same belt of conifers into which P.C.Q. and R.F.D. had seen the birds fly during the morning. Within about half an hour, calls were heard and two birds flew overhead, giving sufficiently good views to establish their identity without the slightest shadow of doubt. They dropped into the belt of conifers at the same spot to which the birds had flown earlier in the day. The three observers crossed over to the spot and had excellent views of the cock bird perched at the very top of a larch. P.C.Q. also caught sight of the female, lower down in a nearby larch, where she remained for some time. Eventually she moved to another larch close by, where she was in full view of all three observers. Here she was watched feeding a newly-fledged young bird. The cock stood guard at his same perch the whole time, calling loudly. When the hen had fed the young one, both adults flew off. A wait of nearly an hour gave no further views of the adult birds. Nor was it possible to discover any more young in the immediate neighbourhood. No young bird could be seen in the larch to which the female had first flown. If birds were present in some of the thicker trees it would, of course, have been impossible to see them.

During the whole of the time we remained in the area, the one young bird which we had located, did not move from its perch about 25 ft. from the ground and close to the trunk of the larch. Its short tail, pale uncrossed bill, scaly head and heavily-streaked breast marked it as a very young bird. The slender larch tree was shaken, but although the young bird appeared almost to lose its balance, it made no effort to fly. We formed the impression that it had left the nest probably on this same day.

Subsequently, on Good Friday, April 19th, D.F.W. arrived in the area by 10.30 a.m. and within half an hour a party of five Crossbills flew over, circled the plantation in which the juvenile had been seen on the 14th April, and dropped into the top of a tall larch. The cock bird took up his stance on the topmost twig while the other four birds flew on to a nearby spruce which carried a heavy crop of cones. Here, the hen bird fed three juveniles. Flying to the five-inch long cones, she hung tit-like while extracting the seeds, which she then carried back to the young birds. When the cock bird flew down to a newly-felled larch, the pinkish-crimson of his crown and rump and his paler flanks were very striking. Disturbed, he uttered the distinctive 'gip, gip, gip' call, and all five birds flew with rapid undulating flight, above the tree-tops and out of sight.

Later in the day, the party of five was located again, and this time the cock fed on larch. The cones were broken from the branches and carried in the bill to a point where the cone could be held against the branch with one foot. It was possible to watch the very thorough working of the bird as it prised the scales open one by one, taking several minutes over each cone. Often the bird swung head downwards, as it reached for a cone not easily accessible; and from time to time it used the bill in parrot fashion, to swing to a new foothold.

Birds were seen on three other visits in April, each time by D.F.W. By May 5th, when a family party of five birds was again located, the young were feeding themselves—on larch seeds; and it was noted that the mandibles were now crossed. On

one occasion, the birds flew to a dead tree and for several minutes stripped off small pieces of bark, before returning to feed on the cones. On this date also, the cock appeared to feed the hen as she crouched with shivering wings.

During the next few weeks, a party of five Crossbills was frequently seen. On two occasions seven birds were present; and on June 15th, eleven were feeding at the top of a tall larch. At least seven of these appeared to be juveniles. No Crossbills have been seen since that date, despite frequent visits to the area. It is thus obvious that at least one pair of Crossbills successfully reared young in this particular area and that other birds were present during the breeding season and possibly also nested successfully.

Previous breeding records for Yorkshire are: Boynton Woods (1829), Bramham Park (1840), Stockton-on-the-Forest (1872), near Pateley Bridge (1876), near Fewston (1902), and near Thornton Dale (1939). Nelson also quotes several other unconfirmed reports of Crossbills breeding. More recently a party of 30 to 40 birds, including juveniles, seen near Harrogate between May 12th and June 3rd, 1954, may indicate breeding in that year also.

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THE DWARF CORNEL IN NORTH-EAST YORKSHIRE

P. M. GARNETT

DURING 1956 I visited the Dwarf Cornel (*Chamaepericlymenum suecicum* (L.) Aschers. & Graebn.) in five separate localities on the North Yorkshire Moors. These stations and their grid references are:

1. The famous station in the Hole of Horcum: GR844929-846931 and 846933-851933.
2. The escarpment overlooking Newton Dale visited by the Y.N.U. in the 1957 Goathland excursion, and disclosed to me also by Mr. Bartlett of the Forestry Commission: GR841948-843948.
3. On Saltergate Brow: GR855943.
4. On Cross Cliff, the most southerly station: GR898917.
5. On Cross Cliff in another place: GR900918.

Much has been written about the plant in these parts since its discovery in the Hole in 1795, and the records are not entirely clear. Only No. 3 of the above may be a new locality. No. 2 seems to match with what Mr. H. J. Burkill wrote in *The Naturalist* for 1907: 'The largest patch of the plants which I know is between the Hole of Horcum and Goathland and was pointed out to me by Miss Barker of Scarborough in 1904. Here it is strongly established and extends for about a distance of 100 yards in the heather. When revisited in 1905 the plant seemed to have spread further down the hillside.' Mr. Bartlett's plants, however, are in a long thin strip directly above a small precipice, and I would not describe the area as a hillside. Mr. R. J. Flintoff, who wrote a paper about the plant in *The North Western Naturalist* for December 1936, does not seem to have known of a locality between the Hole and Goathland, or of one in Newtondale. The plant has been known on Cross Cliff since 1835, and in two places there since at least 1886, since when they seem to have held their own for size and quality. The only other authentic station where the plant has been seen seems to be at Blakey Topping. Mr. Flintoff, in his paper, writes: 'At Blakey Topping at about the same level and in similar aspects a few specimens are to be found. They bloom and appear to be thriving but have not spread. These were first found about ten years ago (i.e. in 1926) by the late A. I. Burnley. Here *Cornus* grows amongst *Vaccinium*.' This part of the moor was taken over by the army and until 1956 was used as a range and battle practice area, and many tracked vehicles were driven up and down this peculiar solitary height. It would be most interesting to know whether the plant survives there.

Mr. Flintoff was at great pains to show that Dwarf Cornel thrived best in company with bracken, and that as bracken spread so Cornel followed in its shade, but the evidence even then seemed to be largely against him and now seems certainly to

be so. In station 5 bracken is absent, and in 3 and 4 is only thinly scattered, the Cornel growing mostly amongst coarse, shrubby patches of *Calluna vulgaris*. In the Hole the lower limit of Cornel is apparently largely defined by the density of bracken, while higher up Cornel is entirely clear of it. A reassuring feature for the continuance of the plant is that where the heather has been burnt there is plenty of young, new Cornel coming on.

The only positive common characteristic of the five sites is that they all face north. This is strongly emphasised in the Hole, which is not entirely round but has two north-facing slopes joined by one which faces west. Cornel thins away at the corners and is entirely absent on the west-facing strip. Mr. G. W. Temperley writing to Mr. Flintoff and quoting other areas where the plant grows in a similar position on north-facing, well-drained slopes asks—why? His own answer was—to avoid drought. This may well be correct. In the first four of our stations the plant grows just below the lip at the top of the ridge. Shaded or not by bracken, heather or bilberry, which are Cornel's most frequent associates, the ground itself does not receive the direct power of the sun. It is always sloping away. In station No. 5 the plants are on a very steep slope considerably farther down the bank in an area recently planted with conifers by the Forestry Commission. Most of the plants here seemed to be growing where the earth had been disturbed.

In 1956 I saw no Cornel in flower, though I could not visit the area at the ideal time, but later in the year there were plants in fruit in stations 2, 4 and 5.

Mention has been made in the past of possible plants in Staindale and Troutdale. I did not visit Staindale which I believe now comes under the Forestry Commission and is entirely tree-covered, but from Cross Cliff eastwards to the sea, and including Troutdale, Langdale Rigg End, the northern slopes of Broxa Forest, Silpho Brow and Cripple Gran Head I have traversed all along just below the lip without seeing the plant. Much of the area is now planted or under forest, but Langdale Rigg End, Blakey Topping and Whinny Nab just east of Saltergate Brow are all likely places, while to the west of the Hole, one beyond the other, are north-facing nabs where Cornel may yet be found. Every one would be worth searching.

AN ORIBATID MITE NEW TO THE BRITISH FAUNA

EDMUND L. SEYD
Manchester Museum

SAMPLES of damp moss taken at 2000 feet on the top of Kinder Scout, Derbyshire, in November 1956, were found to contain a number of different species of Oribatei, including the very common *Platynothrus peltifer* (C. L. Koch, 1839). Closer inspection of the *Platynothrus* material revealed the fact that some of the specimens differed in several characters from *P. peltifer* and two were submitted to Dr. G. Owen Evans of the British Museum (Natural History), who kindly undertook their identification. They proved to be *Platynothrus punctatus* (L. Koch, 1879), a species of the genus not previously recorded in Britain. A full description of this species has been given by Sellnick and Forsslund (1955). For the benefit of British students the following are some of the more obvious points of difference between the two species.

- (1) In *P. punctatus* the posterior margin of the propodosoma is the same width as the anterior margin of the hysterosoma, whereas in *P. peltifer* the posterior margin of the propodosoma is not quite as broad as the anterior margin of the hysterosoma.
- (2) In *P. punctatus* the lateral margins of the propodosoma in front of the pseudostigmata are not so deeply indented as in *P. peltifer*.
- (3) The lamellar hairs of *P. punctatus* are more heavily fringed with small hairs than are those of *P. peltifer*.
- (4) The surface of the rostrum is not punctate in *P. punctatus* whereas it is punctate in *P. peltifer*. In both species the rest of the propodosoma is covered with pits.
- (5) The pseudostigmatic organs of *P. punctatus* are club-shaped and are shorter than those of *P. peltifer*, which taper to a point.
- (6) Seen from above the hysterosoma of *P. punctatus* appears less oval in shape than that of *P. peltifer*. Seen from the side *P. punctatus* appears more deeply-bodied than *P. peltifer*.
- (7) The deep depression on the dorsal surface at the posterior end of the hysterosoma is smaller in *P. punctatus* than in *P. peltifer*.

- (8) The median, lateral and posterior hairs springing from the dorsal surface of the hysterosoma are much shorter in *P. punctatus* than in *P. peltifer*. In the former the most anterior pair of median hairs are placed directly on the anterior margin of the hysterosoma, whereas in the latter they stand a short distance behind this margin. The six posterior hairs of *P. punctatus* are not as strongly curved as are those of *P. peltifer*.

Trägårdh (1910) gives the length of the species as 0.720 mm. and the width as 0.400 mm. Sellnick and Forsslund (1955) give the measurements of one specimen from Abisko as 0.864 mm. long and 0.540 mm. wide. The measurements of five of the specimens from Kinder Scout varied from 0.760 mm. to 0.896 mm. in length and from 0.472 mm. to 0.516 mm. in width. The average was 0.814 mm. in length and 0.496 mm. in width.

The species was first described by L. Koch (1879) on the basis of one specimen from Gåskap, Novaja Semlja. It is also known from Greenland, Iceland, Sweden, Finland, Canada and Switzerland.

The fact that this is the first record of *P. punctatus* for Britain could be explained in two ways. In the first place it may be fairly widespread as a species but collectors have confused it in the past with the very similar *P. peltifer*. Or it may be localized at fairly high altitudes, where probably not a great deal of collecting has been carried out. In view of the present known distribution of the species outside this country it would seem more probable that this second alternative is the correct one. It has been suggested to me by Dr. Evans that the presence of *P. punctatus* on the top of Kinder Scout may be due to its being a relict of an interglacial fauna in Britain, since there is evidence that Kinder was not covered with ice during the Newer Drift stage of the Great Ice Age. Of course this question can only be decided on the basis of further collections made at various altitudes over a wide area, but the possibility is an interesting one.

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VERTEBRATE SECTION MEETINGS IN 1957

THE Spring meeting of the Vertebrate Section at St. John's Parish Hall, Mark Lane, Leeds, attracted a large attendance of over 150, among whom were associate members representing 24 affiliated Societies. The Chairman of the Section for 1957, Mr. Henry Bunce, presided and introduced the Secretary of the Spurn Bird Observatory Committee, Mr. George Ainsworth, who presented the Annual Report of the Observatory's activities. This was followed by the Annual Report of the Ornithological Division given by Mr. Ralph Chislett. A petition protesting against the Order removing protection from the eggs of 13 common species was signed by many of those present.

After the tea interval Mr. G. K. Whitehead gave a talk on 'Deer in Britain' which he illustrated by both slides and colour film. This was followed by a colour film of birds in Scandinavia, presented by Mr. M. D. England. Both speakers gave a most instructive and entertaining programme.

At the October meeting about 70 members were present, including representatives of 14 affiliated Societies. The Annual Report of the Mammals Division, given by Mrs. Hazelwood, preceded the interim reports of the Spurn Observatory Committee and of the Ornithological Division. Mr. Edward Skinner was elected Chairman of the Section for 1958.

A new colour film on British wildfowl was shown by Mr. Gordon Booth but unfortunately, owing to a projector fault, was not presented to advantage. The meeting closed with a talk by Mrs. Hazelwood on the British adder, which was illustrated by slides.

A. H. B. LEE,
Hon. Secretary, Vertebrate Section.

LEISLER'S BAT (*NYCTALUS LEISLERI* KUHL) IN KENT, WITH SOME OBSERVATIONS ON THE PRESENCE OF THE BUCCAL PAD IN THIS SPECIES

DAVID L. HARRISON

A SPECIMEN of Leisler's Bat was obtained by Mr D. B. Jones on the 22nd September, 1957, near Sevenoaks, Kent, and has been preserved and studied by the author.

The bat is a male, and another was seen in the area at the time, and again a few days later by the author. The locality where it was obtained is similar in character to the country at Hildersham Park, Cambridgeshire, where a specimen was obtained by the author (Harrison, 1946). The combination of meadows with isolated tall deciduous woodlands and coppices appears to be the favourite habitat of the species. In this locality there is no large lake in the vicinity as at Hildersham.

It is interesting that this specimen is even darker in colouring than both the



Part of the Buccal Pad of *Nyctalus leisleri* Kuhl, sectioned and stained with Haematoxylin and Eosin. $\times 300$ approx.

44

Cambridgeshire specimen referred to above and also the Essex specimen recorded by Burtsal (1950). The flesh and skull measurements are closely similar and those of the Sevenoaks animal are given below.

Length ...	96.9 mms.	Condylobasal length ...	15 mms.
Forearm... 43 ..		Zygomatic breadth ...	10 ..
Hind Foot 8.9 ..		Breadth of Braincase ...	9.2 ..
Tail ... 39 ..		Maxillary Tooththrow c-m ³ ...	5.4 ..
Ear ... 13.8 ..		Mandibular Tooththrow c-m ₃ ...	5.9 ..
		Mandible ...	11.2 ..

Rigden (1955) recorded a single specimen taken from a tree in Abbey Wood, Woolwich in April, 1953. An earlier record for Chislehurst, Kent, must be considered rather doubtful as it consists of a bare mention of the species without any details in substantiation (see Grinling *et. al.* Woolwich Surveys, 1909, p. 234).

In recent years Leisler's Bat has also been recorded from Bristol (Matthews and Mayes 1948) and from Hertfordshire (Hayden and Kirkby 1953) so that it is now known to be fairly widely distributed across the southern part of the mainland although it is clearly much less numerous than the Noctule (*Nyctalus noctula* Schreber) which is locally quite abundant in the Sevenoaks area. An intensive study of the bat fauna around Sevenoaks has been made over a number of years

and this is the only occasion on which Leisler's Bat has been found so that, as at Hildersham, it can be stated with confidence that it is a rare species in this area.

In 1949 a peculiar epithelial pad was described (Harrison and Davies 1949) in the mouth of *Nyctalus noctula* which we named the Buccal Pad. This is a bilateral oval structure found in the vestibule of the mouth and occupying the angle between the maxilla and the medial aspect of the posterior part of the upper lip. The pad is elevated above the surrounding mucous membrane and is contrastingly white or pale yellowish in colour. Histologically this pad consists of a thickened stratified squamous epithelium, the cells of which have a curious foamy appearance in their cytoplasm in sections stained with Haematoxylin and Eosin. When special stains for fatty substances are employed, however, it is seen that this appearance is due to the fact that the cells are distended with fine lipid granules. Full details of the histology were given in the original description.

At the time when this interesting structure was described it was suggested that it might prove of some taxonomic value and clearly other species ought to be carefully examined for its presence. It was therefore of great interest that the Essex specimen of Leisler's Bat obtained by Mr. Burtsal at Wenden's Ambo on the 21st June 1949 was found on preparation by the author to possess buccal pads identical in situation and in macroscopic appearance to those of *N. noctula*, although like the animal itself much smaller, measuring in fact 3.4 mms long by 2.1 mms. across. A buccal pad was removed from this specimen and was sectioned and stained with Haematoxylin and Eosin, and although the method of fixation unfortunately precluded staining techniques for lipid material the histology of the pad is so closely similar to that of *N. noctula* in the stained section as to leave no doubt that the structure in *N. leisleri* is essentially similar. (See Fig.) As in *N. noctula* the distended foamy epithelial cells of the rete mucosum are separated into groups by fine vascular papillae extending from the basal layers of the pad towards its surface. As the cells approach the surface of the pad they become flattened and empty as the cytoplasm is discharged, while the nuclei often persist. (See Fig.) It is clear therefore that the buccal pad is not confined to *N. noctula* and may well prove to be a generic character. It should be carefully sought for in the very rare Greater Noctule of Eurasia (*Nyctalus lasiopterus*) and in other genera of bats which have not yet been examined for it. No further valid observations can yet be made concerning the possible function of the pad but it is interesting that it appears to show some seasonal variation in size in the Noctule and possibly also in Leisler's Bat, since it was not well developed in the specimen from Kent here recorded.

I am much indebted to Mr. David Jones and to Mr. Kenneth Burtsal for providing the specimens on which these observations are based.

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 HARRISON, D. L. and DAVIES, D. V. (1949). A note on some epithelial structures in *Microchiroptera*. *Proc. Zool. Soc.*, London, **119**, p. 351.
 HAYDEN, J. and KIRKBY, P. (1953). Observations on bats in the Bishop's Stortford area. *Starfish*, No. 6, p. 8.
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Melbourne's Garden, by **Crosbie Morrison**. Second edition. Pp. 158. Melbourne University Press; agents, Cambridge University Press, 1957. 30/- net.

This book, abundantly illustrated with black and white photographs, commemorates the centenary of the founding of what is, by general consent, one of the most beautiful of Botanical Gardens. There is a certain repetition among the photographs, but this does not obscure the real value of the book, which is to show what a great civic asset a garden of this sort can be; how much can be made possible by imaginative planning; and last but not least the degree to which the scientific and the popular can be combined with benefit to each.

R.G.

THE YORKSHIRE NATURALISTS' UNION: NINETY-SIXTH ANNUAL REPORT

The Ninety-fifth Annual Meeting was held in the Mining and Technical College, Barnsley, by kind permission of the Barnsley Education Committee, and at the invitation of the Barnsley Naturalist and Scientific Society.

The Presidential Address entitled 'From Field to Laboratory and Back' was delivered by Dr. John Grainger.

The Presidency for 1958 has been offered to and accepted by Mr. A. Hazelwood of Bolton, Lancs.

The Excursions in 1958 will be to:

- V.C. 61. Malton, for the Kirkham Abbey-Birdsall Area, week-end, July 5th-6th.
- V.C. 62. Hawnby, June 7th.
- V.C. 63. Roche Abbey, June 21st.
- V.C. 64. Settle (Whitsun), May 23rd-26th.
- V.C. 65. Colsterdale, July 19th.

The Membership List.

At the time of writing the membership of the Union comprises 4 Honorary Life Members, 15 Life Members, 339 Ordinary Members, 35 Affiliated Societies, and 29 Family Members.

New Members.

- Archer, Mr. A., 25 Station Road, Worsborough Dale, nr. Barnsley.
- Beldon, Mrs. A. C., 1 Hampton Road, Town Moor Avenue, Doncaster.
- Brindle, A., 86 Princess Street, Nelson, Lancs.
- Downer, C. S., Oxford Villa, 33 London Road, Cheltenham, Glos.
- Elson, B. G., 81 Roman Road, Linthorpe, Middlesbrough.
- Gardam, Miss Pamela, 53 Burniston Road, Hull.
- Gordon, Dr. G. D., 15 Edinburgh Grove, Armley, Leeds 12.
- Harthan, Miss Bessie G., 2 Derbyshire Lane, Stretford, Manchester.
- Haythornthwaite, Mrs. D. E., 9 Aspin Avenue, Crag Top, Knaresborough.
- Hora, Dr. F. B., Dept. of Botany, The University, Reading, Berks.
- Horner, F., 74 Kilnhurst Road, Rawmarsh, Rotherham.
- Jukes, Mr. C., 381 Higham Common Road, Higham, nr. Barnsley.
- Kay, M. S., Green Gables, Broomhill Crescent, Leeds 17.
- Kemp, J. K. C., 12 Nab Wood Crescent, Shipley.
- Milnes, R., 25 High Street, Brighouse.
- Moxon, Mrs. M. E., Briarfield, Long Lane, Dalton, Huddersfield.
- Moxon, Mr. C. S. (Family Member).
- Myers, F. H., 68 Norman Avenue, Bradford 2.
- Newton, J. L., M.R.C.P., L.R.C.P., F.R.E.S., H.M. Prison, Armley, Leeds 12.
- Norman, Miss M. M., 35 Hopewell View, Middleton, Leeds 10.
- Orton, P. D., M.A., A.R.C.M., Dept. of Botany, The University, Reading, Berks.
- Potter, Mr. D. J. R., 43 Crossgates Avenue, Leeds 15.
- Potter, Mrs. D. J. R. (Family Member), 43 Crossgates Avenue, Leeds 15.
- Radford, Miss A., Oak Bank, The Green, Penistone, Yorks.
- Smith, D. H., Cobham House, High Street, North Ferriby, E. Yorks.
- Smith, Miss N., 72 Monks Avenue, Whitley Bay, Northumberland.
- Steel, Mr. A., 4 Poplar Bank, Fenay Bridge, Lepton, Huddersfield.
- Summerfield, Mrs. M., Riversdale Hotel, Valley Drive, Harrogate.
- Summerson, P., Fairfield, Barnard Castle, Co. Durham.
- Teasdale, G., F.R.S.A., F.Z.S., M.B.N.S., 'Sonnblick', 3 New Way, Tranmere Park, Guiseley, near Leeds.
- Wakefield, G. B., Rectory Farm, Glebe Gate, Thornhill, Dewsbury.
- Wilcock, H., 399 Bradford Road, Gomersal, Leeds.

Deaths.

- Firth, E. S.
- Walsh, G. B.

Resignations.

Adams, F. W., B.Sc.
Bland, Miss B. H.
Barras-Smith, M. A.
Edwards, R. L.
Horsley, G. F.

Huddleston, Miss A. M.
Jackson, W., B.Sc.
Porritt, Miss M. E.
Taylor, Miss M. M.
Thornley, W. A.

Changes of Address.

Bayford, E. G., c/o H. Bayford, Esq., 3 Mansion Avenue, Whitefield, Manchester.
Davis, Peter E., Bird Observatory, Fair Isle, by Lerwick, Shetland.
Elliott, Dr. J. H., 18 Stainburn Crescent, Leeds 17.
Grace, J., 27 Fir Avenue, Ravensthorpe, Dewsbury.
Greaves, Walter, Stafford Hall, Huddersfield Road, Halifax.
Hunt, C. W., B.Sc., 7 Spur Road, West Green, London, N.15.
Haigh-Lumby, A., Grange Hotel, Harrogate.
Heron, Dr. A. M. R., George-a-Green, Lupset, Wakefield.
Jefferson, P., M.Sc., 'Mill House', Selby Lane, Keyworth, Notts.
Lewis, R., 'Chatsworth', 1 Victoria Park, Colwyn Bay, Denbighshire.
Longfield, Miss C. E., F.R.E.S., M.B.O.U., The Park House, Cloyne, Co. Cork, Eire.
Norris, J. R., Ph.D., Dept. of Science Bacteriology, Anderson College, 56 Dumbarton Road, Glasgow, W.2.
Pearsall, Prof. W. H., F.R.S., 6 Pemberton Drive, Morecambe, Lancs.
Walker, A. B., Yew Grange, Glaisdale, Whitby.
Warters, Miss D., 78 Topcliffe Road, Thirsk.
Worsley, Mrs. H. M., Westerton, Scalby, Scarborough.

FRESHWATER BIOLOGY

(E. Thompson): Once more this section has had a poor year with little work being done, and the interesting reports by past and departed members are still sorely missed. Bearing this in mind it was most pleasing to find G. Fryer who left Yorkshire some years ago, attending the Stainborough meeting and back on his old grounds.

The writer was able to visit the Yorkshire side of the River Lune near Low Gill and though the main object was not freshwater biology a short time spent examining a mountain stream brought to light some well-grown nymphs of *Perla carlukiana* Klap. These streams running from the high fells are typical haunts of this stonefly. In a smaller stream nearby some flatworms were numerous, and as this habitat was suitable for *Planaria alpina* a few were taken, but misplaced on the journey home.

Near Dewsbury the usual Trichoptera have been about, with various species of *Limnephilus* most in evidence. The large species *L. rhombicus* L. could be collected by our larger waters on suitable days, with the white spot on the anterior wing of the insects quite plain on those examined. By late summer large numbers of *L. lunatus* Curt. were flying about the Bretton Lakes. This caddis is a favourite food for the fishes of this place, which feed greedily on them. On the other hand *Trisoptodes bicolor* Curt. is not common, though many suitable places occur, and it is not regarded as rare elsewhere.

Perhaps the most interesting event in this district was the finding of a leech new to Yorkshire at Bretton, a note of which appeared in *The Naturalist*, 136, 1957.

MAMMALS, REPTILES, AMPHIBIANS AND FISHES

Mammals (Mrs. A. Hazelwood): *Insectivora*: The Common Shrew has been reported from Knaresborough, also Pigmy Shrews which have been found several times in bee-hives. Two Water Shrews were seen on April 18th at Boathouse Mill-pond, West End, near Harrogate.

Chiroptera: Noctule and Pipistrelle Bats are both reported from Knaresborough where the first Pipistrelle was seen on April 2nd this year. A Pipistrelle was seen near York at 10-30 a.m. on October 6th.

Carnivora: The fox appears to remain common everywhere despite the various methods of destruction employed against it. In the Barnsley area they have become so hungry (as a result of the widespread myxomatosis in the area?) that they have

attacked live sheep in broad daylight. The *Sheffield Star* for March 27th reported that a large dog fox attacked two dogs and bit out the front teeth of one of them when being driven out of its lair at Smithy Farm, Wombwell. Badger sets are reported from Deffer Wood, Cawthorne, and Silkstone Common, but occupation, if any, has not yet been ascertained. Badgers are also reported from The Moorlands within four miles of York. Near Knaresborough three, possibly more, sets, two of which were known to contain cubs, were destroyed last spring. A badger caught in March near the centre of Harrogate by R.S.P.C.A. Inspector Jackson was released a few miles away. A rather amusing incident is reported from Knaresborough by Mr. Beck. On May 29th Mr. Beck took possession of two cubs which had wandered into an enclosed yard and he locked them up in a building. His friend, Mr. Downhill, took them home with the intention of setting them free where he considered they would be safe. They were two young sows about three months old and were put into a strong box awaiting transport. They readily ate all the food given to them but unfortunately escaped after two days. The area is completely built up but a search did not reveal them. On August 28th Mr. Downhill found new workings and latrines close to his own house! There is evidence of otters in the middle reaches of the River Nidd and on August 10th otter hounds found and hunted one—possibly two—near Walshford Bridge. The river was running high and the otter(s) escaped. On January 23rd one was seen at Apperley Bridge. In October a railway ganger reported that an animal which he described as having 'a head like a seal and webbed feet' was found dead on the railway line at Silkstone Fall near Barnsley. The animal's identity was not confirmed. Stoats and weasels appear to be on the increase, possibly due to the decline in the number of gamekeepers employed.

Lagomorpha: Brown Hares have been seen in large numbers in any suitable locality and seem to be still on the increase. The following interesting note on the behaviour of two hares comes from Mr. Beck. Early in May Mr. Beck's friend was going down his fields when he was attracted by the antics of two hares which were running round a fallen hawthorn. They stood up and looked into the centre of the fallen tree and were most interested in something there. The friend approached openly and was quite close before the hares moved away. When he got to the tree, a fox jumped out and, it seemed, quite reluctantly made off slowly. Looking at the spot the friend found an adult hare, warm and freshly killed. He collected the hare and had only gone a short distance when he saw the fox come back to collect its kill. A Brown Hare disturbed in Silkstone Fall Wood, Barnsley, in March, left a leveret behind in its form.

The rabbit appears to be making a 'come-back' throughout the county in those areas where myxomatosis so greatly reduced the numbers. However, there would appear to be a few new introductions of the disease in areas which have, up to now, remained free, as in the Hebden Valley on Hardcastle Crag. Mr. H. Swann (West Riding County Pests Officer) stated that the disease will be allowed to run its course, after which the West Riding Agricultural Pests Sub-Committee will probably declare the district a rabbit-free area, a condition which will have to be maintained by those concerned. It would seem that even there the disease has not spread from the valley as numerous rabbits in the adjoining valley of Crimsworth Dene appear to be in good health. A second outbreak of myxomatosis near Ripon has been reported but this would appear to be less virulent than the earlier one.

Rodentia: Water and Bank Voles are both reported widespread although there has been a noticeable decrease in the numbers of Water Voles near Mytholmroyd where few seem to remain. Three Short-tailed Field Voles were found in the nest of a Short-eared Owl at Walshaw in May. The Red Squirrel has not been seen in the Knaresborough neighbourhood though it appears to be steadily increasing in numbers around Mytholmroyd and extending its range. This squirrel has been seen regularly in both Silkstone Fall Wood and Ranksley Wood at Gunthwaite. The hard winter of 1955-6 is thought to have reduced the Red Squirrel in the Bretton area but recently the species has been recorded from Meltham, Grimscar, Berry Brow and Thongsbridge, all in the Huddersfield area. Mr. Morley forwards the following interesting account. The resident at Gibson Mill, Hardcastle Crag, who has a sweet kiosk, said that a Red Squirrel had been shot there as it was mistaken for a rat in the early morning light. Quite a lot of damage had been done to chocolate in the kiosk and some *DAK* had been put down to catch the culprit. Unfortunately it was the Red Squirrel which had been taking the nuts from the chocolate. For several days the squirrel's mate had stayed about the place and had had to be

driven away. There are possibly four pairs of Red Squirrels in the Luddenden Dene valley where young ones have been seen. Mr. Ellis kindly forwarded the following notes re the distribution of the Grey Squirrel. Leeds Parks Superintendent has a man shooting Grey Squirrels part-time in Roundhay Park but he has no further concentration although odd ones do occur at Temple Newsam. Sixteen were shot 'three to four years ago' at Cottingley, and records exist for Shipley Glen, Spring Wood (Baildon), and Esholt, probably part of the same lot, according to Mr. Jackson of the Cartwright Museum, Bradford. Two dreys have been made in Lister Park, Bradford, which appear to be an extension of the range. A freshly dead specimen was found at Askwith in Wharfedale in May. The Grey Squirrel is still common around Knaresborough but there it appears to be kept in check by the '2/- per tail' scheme of the County Agricultural Committee.

Ungulata: One female Fallow Deer was seen in the Cawthorne area on April 7th.

Reptiles: The Slow-worm is recorded regularly from Nidderdale whilst the Common Lizard is found sparingly over a wide area, around Knaresborough. An Adder is recorded from the moors near Pateley Bridge. The only record for the Halifax area in the last fifty years appears to be of an Adder seen on Heptonstall Moor by Mr. E. Dearing in August 1952. Two Adders are reported from Wombwell Wood. Grass Snakes have been in the news on five occasions in the Barnsley areas. In June a Grass Snake was found near the door of a house in Pogmoor, where it was immediately killed. One of the Barnsley Society members went to do some repairs to Haygreen Farm at Birdwell where he saw 'quite a number' of Grass Snakes about the farm, one of which was seen to attempt an attack on a young thrush. On July 20th one was found lying on the pavement in a built-up area; after being taken to the R.S.P.C.A. clinic it sloughed its skin and was later released on the moors but possibly this snake was not native. On August 3rd one was found basking in the sun in rather poor pasture near Worsbrough Reservoir. When being handled, it discharged its defensive fluid so effectively, that the handler, one of the Society's younger members, had to go home! Lastly, on September 4th, two schoolboys discovered one 29 inches long in Wombwell Wood. It had been crushed by a passing car. This snake is known to occur on the banks of the River Nidd but has not been reported this year. In the Vale of York, the Grass Snake is rare but one measuring 28 inches long was found near Hull Road, two miles east of York, on September 8th.

Amphibians: All three species of newts have been reported from Knaresborough. The Common Newt was plentiful in a pond in Dodworth Road Quarry, Barnsley, where on April 7th both frog and newt tadpoles were found in quantity. Frogs were mating in the lake at Cannon Hall Park, Cawthorne, on March 16th but no spawn had been deposited although spawn was already in the pond in Silkstone Fall Wood and the disused canal near Barugh. On March 30th many dead frogs (having been run over) were found on the road in Everill Gate Lane at Broomhill; their breeding pond was in the adjacent field.

Fishes: Mr. E. W. Taylor submits the following report. When the Catchment Board cleaned out the small ditch at Tilmire in November 1956, a Pike weighing 8 lb. was caught; possibly it had come up the river, a mile away, in its time of flood. On March 3rd in the same ditch three Trout were caught, the largest of which weighed 1 $\frac{3}{4}$ lb. Sewage from Huntington enters this ditch. A Trout weighing 7 lb. 3 oz. was taken from the River Ouse just above York on May 5th and another weighing 4 lb. 3 oz. from the River Dove near Kirby Moorside on August 13th.

Lampreys were running in the River Derwent near Kirkham Abbey on April 20th.

Correction

In the Annual Report for 1956 it was stated that the Grayling has vanished from the River Wharfe. Mr. A. Thompson informs us that in the neighbourhood of Bolton Abbey in the autumn of 1955 Grayling still occurred but in much reduced numbers.

My grateful thanks are due to all those naturalists who have so kindly contributed the above information and thus made the report possible.

Ornithology

Interim Report (R. Chislett): Reprints of the detailed Report for 1956, as published in *The Naturalist* for April 1957, were made available to contributors.

At the meeting held on March 16th, 1957, Mr. M. D. England, who had travelled

to us from Surrey, delighted a large attendance with his talk and colour-films of Grebes, Turnstone, Osprey and other species studied in Denmark and Scandinavia.

The early months were mild, and such birds as the Divers occurred less frequently on inland waters than in early 1956, which was severe. Unusually early records of some of the migrants followed. Spring and early summer were dry but cold, with moorland fires in some districts in which they are seemingly inevitable during dry periods—accidental fire-raising is as damaging to birds as deliberate arson! Reservoirs were at low levels in June. Normally late migrants such as Flycatchers were delayed.

A good, dry, breeding season, especially among ground-nesting birds, produced a large population of young birds in July. During the June drought Lapwings noticeably led their young through walls and across roads to marshy places where larger numbers collected than usual. A new hazard to young Lapwings resulted from binder-twine left about fields, which became entangled with the feet of quite a number, sometimes with unfortunate results. Juvenile passerines were also numerous in July; I never had so many Bullfinches in my garden and managed to ring 14.

Parties of young and adult Crossbills were recorded unusually early, at dates that suggest breeding by some from the parties that had wintered; adults were seen feeding young in several places. The areas concerned were widespread, from near Sheffield and Barnsley to Wharfedale and Hambleton, Cleveland. I would like full details from all districts.

Short-eared Owls bred in several areas. In one moorland area voles were apparently at their peak in numbers, and the owls had collected in consequence. That the old and flying young Short-eared Owls were ruthlessly slaughtered showed small intelligence in either gamekeeper or shooting party.

From July into September we had many rainy days, sometimes several consecutively; but reservoirs filled up less quickly than after the dry spring of 1956.

The declaration of Fairburn Ings as a Nature Reserve was referred to in *The Naturalist* for July. Our Ornithological Hon. Secretary, Mr. R. F. Dickens, is to be congratulated on the success that has attended his sustained efforts.

The Spurn Bird Observatory has quietly continued its work. The first part of a book dealing with the history of the Observatory from the beginning, and with its achievements, has been written and is in the printer's hands. Members will be asked to subscribe for copies. In 1957 a Pectoral Sandpiper was a new species to be recorded. A Red-headed Bunting was caught by G. R. Wilkinson in May. A large number of Snow-Buntings were ringed in the early months and highly interesting recoveries of the species are beginning to accrue from such sustained work. In this, the second wet late-summer in succession, some Little Terns again reared young. Although Mr. Ainsworth has been remarkably successful in his efforts to secure competent coverage over the long periods of migration, difficulties arose for him when it was found, rather late, that one or two parties of friends were not coming for their accustomed periods.

It is hoped that members will send in the bulk of their notes before the year end (I already have batches of notes from a number of members up to September 30th) and their final notes by the end of the second week in January.

CONCHOLOGY

(Mrs. E. Morehouse): Although we have had much rain during the past year, warmth has been lacking. This is not conducive to good collecting. Again, the cold winds were not favourable to the conchologist.

Mr. J. Armitage and Mr. S. G. Appleyard had the good fortune to find *Agriolimax caruanae* Poll. a mollusc new to Yorkshire. These were verified by Dr. H. E. Quick.

Mr. J. Armitage sends the following report: During a field excursion of the Yorkshire Conchological Society to Boston Spa on April 13th, 1957, some of the members found a number of slugs in the upper part of Deepdale. This wooded valley, about 12 miles north-east of Leeds, runs down to the River Wharfe by Jackdaw Crag, and is drained by a small stream polluted at the top of the valley by sewage from a farm. The slugs noted were *Arion circumscriptus* Johnston, *A. hortensis* Fér., *Milax gracilis* Ley, *Agriolimax reticulatus* Müll., also several small chocolate-brown slugs suggestive of *Agriolimax laevis* Mull. lying under stones and in places too dry for the typical setting of this species. A more intensive search revealed many others, some were larger, of a greyer and more translucent-brown tint, agreeing

with specimens of *Agriolimax caruanae* Poll. as found in its main haunts in Devon and Cornwall. It is the so-called Maltese Slug, an active and irritable creature associated with gardens and vegetable refuse in waste places, so far recorded from a few widely distributed parts of Britain. There are no previous details for Yorkshire but Dr. H. E. Quick considers it possible that some of the records in Taylor's Monograph of *Agriolimax agrestis* var. *panormitana* Less. may refer to this species.

Mr. J. H. Lumb found a very fine specimen of *Arion ater* var. *brunnea* Roebuck in his garden at Halifax.

Mr. E. Dearing noted large numbers of *Anodonta cygnaea* L. at Barrowford, near Nelson, and at Bank Newton, near Gargrave, where two sections of the canal were drained for repair; also a good specimen of *Limnaea stagnalis* L. Mr. Robinson records *Ancylus fluviatilis* Müll. in the River Wharfe, between Ben Rhydding and Ilkley Bridge on June 11th. He also took a large *Littorina littorea* L. at Morecambe.

Mr. E. Thompson reports that in Coxley Valley there were numerous *A. arbutorum* L., *V. nitidula* Drap. and *C. lubrica* Müll., while a few *V. pura* Alder exist. Near Gunthwaite some giant *L. maximus* L. were taken from beneath fallen timber. Mr. John Grace, while making a rockery, found *Testacella haliotidea* Drap. and he had the good fortune to take more a few days later. *Aplecta hypnorum* L. was taken at Selby and *Ancylus fluviatilis* Müll. was seen in Winterset Reservoir. Numerous *Planorbis cristata* L. were in a small pond at Grange Moor, east of Huddersfield.

The Leyburn Meeting of the Y.N.U. at Whitsuntide was successful for conchologists. It was good to find the molluscs given in old records still persisting. In all, 22 terrestrial and one freshwater mollusc and nine slugs were noted. The land molluscs included *A. tridens* Plut., *Helicella itala* L., *Helicigona lapicida* L. (found by Miss Rob in the quarry below the Shaw) and also *Vallonia costata* Müll. *Limax arborum* Bouch-Chant. was found in Bolton Castle Woods.

ENTOMOLOGY

Coleoptera (S. Shaw): During the past year localities of approximately 240 species have been entered on the records, resulting in the addition of 11 species to the county list and three new vice-county records.

The following list includes all the new records and other little-recorded or otherwise interesting species. It will be noted that the majority of the new records are among the Staphylinidae; this is due to the collecting of Mr. W. O. Steel who kindly sent me a list of 150 species, the results of his work at Malham. Mr. Steel's list includes many interesting species other than the new records here published but I have not included any of them in this report as a comprehensive survey of the Malham area is to be published in the future.

Abbreviations.—J.A. = J. Armitage; A.M.C. = A. M. Clay; H.E.F. = Mrs. H. E. Flint; J.H.F. = J. H. Flint; W.D.H. = W. D. Hincks; S.S. = S. Shaw; W.O.S. = W. O. Steel; J.W. = J. Wood.

†New County Records.

*New Vice-County Records.

Helobium multipunctatum (L.) (61). Found near Selby, 25/7/57; J.A. This species is recorded only twice previously from V.C. 61, once from Skipwith and once from Bubwith near Selby in March 1911.

Bradycellus harpalinus (Serv.) (63). Chancet Wood, Sheffield, 3/6/57; S.S. This common species has only been once noted on the records from V.C. 63.

Agabus congener (Thun.) (64). Fountains Fell, one specimen in a peat pool, 9/57; J.H.F.

Pltomophagus sericatus (Chaud.) (64). Adel, Leeds, one ♂ in a carrion trap, 20/5/57; J.H.F. (Kevan, 1945, *Ent. mon. Mag.* 81: 121, shows this to be a distinct species and not a variety of *P. subvillosus* (Goez.) as has been previously recorded.)

†*Choleva glauca* Britten (64). Malham, Tarn House Plantation, a single ♀ running in the road, after rain, 7/56; W.D.H. (det. J.H.F.).

Catops grandicollis Er. (64). Malham, abundantly in carrion, 9/57; J.H.F. Previously taken in this vice-county from Ingleborough.

C. coracinus Kell. (64). Malham, in carrion, 7/56, 9/57; J.H.F. There are very few Yorkshire records and only one previous locality for this vice-county—Ripon 1879.

Megarhtrus depressus (Pk.) (63). Chancet Wood, Sheffield, 3/6/57; S.S.

†*Phyllodrepa grandiloqua* Luze (64). Malham, 6/54, 8/55, 9/57; W.O.S.

- Omalium septentrionis* Thoms. (*64). Malham, 7/56; W.O.S. This is only the third Yorkshire record.
- †*O. rugatum* Rey (64). Malham, 6/54; W.O.S.
- †*O. laticolle* Kr. (64). Malham, 8/55, 9/57; W.O.S.
- O. oxyacanthae* Grav. (64*). Malham, 7/56; W.O.S. Only twice recorded, in the past, for Yorkshire.
- Phloeonomus punctipennis* Thoms. * (64). Malham, 6/54, 7/56, 9/57; W.O.S.
- Olophrum fuscum* (Grav.) (64*). Malham, 6/54, 9/57, also widespread on Penyghent; W.O.S.
- Anthophagus caraboides* (L.) (64). Ripon, in some numbers on the river bank, sweeping, 6/57; J.H.F.
- Platystethus arenarius* (Geoff.) (63). Chancet Wood, Sheffield, 3/6/57; S.S.
- Stenus fulvicornis* Steph. (63). Chancet Wood, Sheffield, 3/6/57; S.S.
- Philonthus nigriventris* Thoms. (64*). Malham, 9/57; W.O.S.
- Quedius mesomelinus* (Marsh.) (63*). Chancet Wood, Sheffield, 27/5/57; S.S.
- Q. laevigatus* (Gyll.) (64*). Malham, 6/54, 9/57; W.O.S.
- Q. nigriceps* Kr. (64*). Malham, 7/56; W.O.S.
- †*Q. boopoides* Munst. (64). Summit of Penyghent; W.O.S.
- Mycetoporus brunneus* (Marsh.) (64*). Malham, 8/55; W.O.S.
- Tachinus laticollis* Grav. (63). Chancet Wood, Sheffield, 27/5/57; S.S. There are no recent records of this species from Yorkshire.
- Oligota inflata* Mann. (64*). Malham, 9/57; W.O.S.
- O. pusillama* (Grav.) (64*). Malham, 9/57; W.O.S. The only other Yorkshire record for this species is from Scarborough.
- †*Leptusa norvegica* Strand (64). Malham, 6/54, 9/57; W.O.S.
- †*Autalia puncticollis* Sharp (64). Malham, 6/54, 9/57; W.O.S.
- Atheta luridipennis* (Mann.) (64*). Malham, 8/55; W.O.S.
- A. eremita* Rye (64*). Malham, 6/54, 9/57; W.O.S.
- A. tibialis* (Heer) (64*). Malham, 6/54, 9/57; W.O.S.
- A. indubia* (Sharp) (64*). Malham, 6/54, 9/57; W.O.S.
- A. coriaria* (Kr.) (64*). Malham, 9/57; W.O.S.
- A. britanniae* Bernh. (64*). Malham, 8/55, 9/57; W.O.S.
- A. nitidula* (Kr.) (64*). Malham, 6/54, 9/57; W.O.S.
- †*A. intermedia* Thoms. (64). Malham, 6/54; W.O.S.
- A. cinnamoptera* (Thoms.) (64*). Malham, 7/56, 9/57; W.O.S.
- †*A. laevana* (Muls. & R.) (64). Malham, 6/54, 7/56; W.O.S.
- A. setigera* (Sharp) (64*). Malham, 6/54; W.O.S.
- A. macrocera* (Thoms.) (64*). Malham, 6/54; W.O.S.
- A. ischnocera* Thoms. (64*). Malham, 8/55; W.O.S.
- A. parvula* (Mann.) (64*). Malham, 6/54, 8/55; W.O.S.
- A. sordidula* (Er.) (64*). Malham, 6/54, 9/57; W.O.S.
- †*A. celata* (Er.) (64). Malham, 8/55, 9/57; W.O.S.
- A. laticollis* (Steph.) (64*). Malham, 8/55, 9/57; W.O.S.
- Phloeopora angustiformis* Baudi (64*). Malham, 8/55, 7/56; W.O.S.
- Oxyopoda umbrata* (Gyll.) (64*). Malham, 8/55; W.O.S.
- †*O. islandica* Kr. (64). Malham, 8/55; W.O.S.
- O. annularis* Mann. (64*). Malham, 6/54, 9/57; W.O.S.
- Cantharis cryptica* Ashe (61*). Pocklington, 26/6/57; S.S. Now recorded from V.C.s 61, 62, 63, 64.
- Malthodes flavoguttatus* Kies. (64). Ripon, commonly by sweeping, 6/57; J.H.F. First recorded from this V.C. in the last report.
- Agriotes acuminatus* (Steph.) (63). Chancet Wood, Sheffield, 3/6/57; S.S.
- Kateretes bipustulatus* (Pk.) (64). Adel Dam, Leeds, sweeping in marshy places at dusk, 20/5/57; J.H.F. This is the second record for this V.C., the previous record being from the same locality.
- Librodor hortensis* (Geoff.) (61). Pocklington, sweeping by the canal, 26/6/57; S.S.
- Telmatoophilus caricis* (Ol.) (61*). Pocklington, sweeping by the canal, 26/6/57; S.S.
- Atomaria bicolor* Er. (63). Chancet Wood, Sheffield, 3/6/57; S.S.
- Rabocerus gabrieli* Gerh. (62). Goathland, beaten from old birch in Fen Bog, 13/7/57; H.E.F. (det. J.H.F.). This scarce beetle has not been taken in V.C. 62 for many years.
- Salpingus ater* (Gyll.) (63*). Keighley, 19/1/30; J.W. (det. W.D.H.). There are very few Yorkshire records for this species.

Saperda scalaris (L.) (62). Rievaulx, in flight in hot sunshine, 6/57; A.M.C. (det. J.H.F.).

Hydrothassa aucta (F.) (61*). Pocklington, sweeping by the canal, 26/6/57; S.S.

Sitona humeralis Steph. (61). Pocklington, 26/6/57; S.S.

Liosoma deflexum (Pz.) (63*). Chancet Wood, 27/5/57; S.S.

Imported species

Monochamus sutor (L.) Found in timber, Leeds 8, 22/7/57; J.A. Found in timber, Whitkirk, Leeds, 30/7/57; J.A. (det. J.H.F.).

Lepidoptera (F. Hewson): Sixteen correspondents sent in reports and all write of reduced numbers of Lepidoptera seen. Various factors may be supposed to have contributed to this. A succession of cold wet summers may inhibit flight and therefore mating possibilities, producing a slow decline in successive generations. At three Union Field Meetings in 1955 I commented upon a scarcity of larvae (*The Naturalist*, pp. 163, 167, 170), and the two following years were extremely unlikely to assist either butterflies or moths to become more numerous. Habitual migrants were reduced or even unrecorded, for instance one *Herse convolvuli* L. (*Convolvulus* Hawk) compared with the 11 of 1956, and two *Acherontia atropos* L. (*Death's Head* Hawk) compared with 17. Of human interference Mr. W. Beck, of Knaresborough, writes: '... even the most common (moths) have not appeared in their usual numbers. In this connection I am convinced that the spraying of weed killers on old pastures and hedgerows is having a serious effect on ova and larvae. In this district the County Council have sprayed grass verges along roads—in some cases eight or nine feet wide—for many miles, killing all nettles and broad-leaved plants.' However, some species or another is always up to its usual numbers and there are exceptions to the above.

The most interesting reports concern *Dilina tiliae* L. (*Lime Hawk*). Mr. E. F. Gilmour wrote that a Lime Hawk had been brought into the Museum and Art Gallery at Waterdale, Doncaster, in June. This was in a rather battered condition and handed to one of the attendants by a child, so that there was no opportunity to seek fuller details of its origin. Apart from the single record in Porritt's List, published in 1882, and from an even older source, I had no knowledge of its occurrence in Yorkshire. Upon writing Mr. L. G. F. Waddington to ask if he knew of anyone rearing the species locally I was pleased to receive details of three imagines and four pupae from a locality near Doncaster between 1951 and 1956. Mr. Gilmour made further enquiry and discovered that one had been found in 1954 by E. Benton and R. Taylor. In 1957 these two recorded two more and D. White had one larva and dug two pupae. These make it apparent that the species has at least a foothold near Doncaster.

Since the year has been so poor I have summarised all the butterfly records sent in, excluding those reported on Union Field Meetings, and as usual the more interesting moth records.

KEY TO INITIALS.—W. Beck, J. Briggs, I. G. Brown, W. E. Collinson, R. Crossley, I. Downhill, J. H. Flint, E. F. Gilmour, C. R. Haxby, A. M. R. Heron, F. Hewson, J. Hooper, J. Hudson, S. M. Jackson, C. Scott, C. C. Smith, E. W. Smith.

Dira megera L. (Wall.). Common on railway embankment near Buttercrambe Woods, 3/8, common west of Hull, 5/8; J.B. and C.R.H. Is found all round the Knaresborough district, but only in ones and twos; W.B. One near Denby Dale, 15/6; R.C. Now fairly common at Wakefield; J.Ho. One near Selby, 13/5, the earliest known to S.M.J., second brood less than usually common and not seen until late July. Pannal, near Harrogate, 11/8; C.S.

Eumemis semele L. (Grayling). Only one seen near Selby, where several were seen in 1956; S.M.J.

Maniola tithonus L. (Gatekeeper). A number seen in a very restricted colony near Market Weighton in early August; S.M.J.

M. jurtina L. (Meadow Brown). Abundant and in good condition at Copgrove, near Knaresborough, 30/6; J.B. and C.R.H.

Coenonympha pamphilus L. (Small Heath). Common at Copgrove, near Knaresborough, 30/6; J.B. and C.R.H. Fair numbers near Knaresborough during the warm weather in June; W.B. Abundant near Dean Head Reservoir first fortnight in June; R.C. At least as common as usual near Selby; S.M.J.

- Aphantopus hyperantus* L. (Ringlet). Patrington, 5/8; S.M.J. One taken in the centre of Doncaster, 29/6; E.W.S.
- Argynnis selene* Schiff. (Small Pearl-Bordered Fritillary). Skipwith Common, 16/6, apparently unaffected by the fire of 2/6, probably because it inhabits the damper parts; S.M.J.
- A. aglaja* L. (Dark Green Fritillary). One Sandburn, near Strensall, one on Skipwith Common, the only two noted in several years; S.M.J.
- Vanessa atalanta* L. (Red Admiral). Two at Bradford, early September; R. Robertson per J.B. One at Bradford, 3/10; F.H. One at Knaresborough, 4/10; W.B. Halifax, 13/10; R.C. Wakefield, 25/8; A.M.R.H. The only migrant butterfly, apart from *Pieris* spp., seen at Selby; S.M.J. Bradford, 8/10; C.S.
- V. cardui* L. (Painted Lady). One at Knaresborough, 28/9; W.B.
- Aglais urticae* L. (Small Tortoiseshell). The most numerous butterfly at Knaresborough; W.B. Wakefield, 13/3; J.Ho. Double-brooded at Selby this year. Larvae observed in June-July and then late August; S.M.J.
- Nymphalis io* L. (Peacock). In the Selby district two hibernated specimens only, but as usual a number were about in August; S.M.J.
- Polyommatus icarus* von Rott. (Common Blue). Fair numbers at Knaresborough in the warm weather in June; W.B.
- Lycena phlaeas* L. (Small Copper). Fair numbers at Knaresborough in June; W.B. Dean Head Reservoir, 2/6, Huddersfield, 29/8; R.C. Wakefield; J.Ho. At Selby in May, earlier than usual; S.M.J.
- Pieris* spp. Not many in the Halifax district; W.E.C.
- P. brassicae* L. (Large White). Few noted at Huddersfield; R.C.
- P. napi* L. (Green-Veined White). More of this species than *P. brassicae* or *P. rapae* at Knaresborough; W.B. First seen near Dean Head Reservoir on 6/5 but not again until early June, during the first fortnight many were taken for identification and all were of this species; R.C.
- P. rapae* L. (Small White). Some at Huddersfield, but never in large numbers; R.C. Good numbers at Wakefield; J.Ho.
- Euchloe cardamines* L. (Orange Tip). In fair numbers around Knaresborough but not so many as the previous year; W.B. Only one seen near Selby; S.M.J. Linton, near Wetherby, 1/6; C.S.
- Augiades venata* Br. & Gr. (Large Skipper). One taken in his garden at Elland by Mr. W. Ainley, new to the Halifax Scientific Society records; W.E.C. A few at Copgrove, near Knaresborough, 30/6; J.B. and C.R.H.
- Nymphalis antiopa* L. (Camberwell Beauty). Upon seeing in *The Entomologist* a mention of this species in Yorkshire I wrote to the Recorder for Migration, Mr. R. A. French, who replied that one was seen at York on May 2nd, 1956, by M. G. Dougal of Ampleforth College, vide *The Field* of May 24th, 1956, p. 924.
- Craniophora ligustri* Schiff. (Coronet). One, black form, bred 29/6, from a north-west Yorkshire larva; S.M.J.
- Nonagria typhae* Thun. (Bulrush Wainscot). Pupae collected near Knaresborough, 21/7, moths emerged second and third weeks in August; W.B. and I.D.
- Pyrrhia umbra* Hufn. (Bordered Sallow). A few young larvae on Rest Harrow at Spurn, 5/8; J.B.
- Thalophila matura* Hufn. (Straw Underwing). One at M. V. Light, Buttercrambe Woods, 3/8; J.B.
- Euxoa tritici* L. (White Line Dart). Three at Spurn, 5/8; J.B.
- Brachionycha sphinx* Hufn. (Sprawler). A larva beaten off elm near Tadcaster proved to be 'stung' and soon died; S.M.J.
- Cucullia absinthii* L. (Wormwood Shark). One at Wakefield, M. V. 19/7; A.M.R.H.
- C. asteris* Schiff. (Starwort). Fifteen half- to threequarters grown larvae found in a small area at Spurn, 5/8; J.B., C.R.H., S.M.J.
- Lithomoia solidaginis* Hueb. (Golden Rod Brindle). One, newly emerged, near the Cow and Calf Rocks, Ilkley, 18/8; F.H.
- Griposia aprilina* L. (Merveille du Jour). For the third time during the past few years pupae were found in a locality near Harrogate by W.B.
- Hadena chenopodii* Schiff. (Nutmeg). Lightcliffe, Halifax, at light, 1/7; I.G.B.
- Heliophobus saponariae* Bork. (Bordered Gothic). Knaresborough, two at M.V. Light, 29/6; I.D.
- Zanclognatha tarsipennalis* Tr. (Fan-Foot). Deffer Wood, 31/7, M.V. Light; J.B. Common at light at Leeds, 5/7 to 22/7; C.C.S.

- Sterrha sylvestraria* Hueb. (Dotted Border Wave). Two, rather worn, Allerthorpe Common, 18/7; S.M.J.
- Scopula remutaria* Hueb. (Cream Wave). Cliffe Common, near Selby, 3/7; S.M.J.
- Eupithecia trisignaria* H.-S. (Triple-Spotted Pug). A nice series bred from larvae taken at Bishop Wood in autumn, 1956; S.M.J.
- Discoloxia blomeri* Curt. (Blomer's Rivulet). Cayton Bay, near Scarborough, -/7, on a chalet in the morning; J.H.F.
- Plagodis dolabraria* L. (Scorched Carpet). Knaresborough, M.V. Light, 29/7; I.D.
- Acherontia atropos* L. (Death's Head Hawk). Two badly battered specimens were brought into the Waterdale Museum and Art Gallery at Doncaster this year; E.F.G.
- Smerinthus ocellatus* L. (Eyed Hawk). Two taken into the Waterdale Museum and Art Gallery, Doncaster, in June, one apparently newly-emerged; E.F.G. Two at M.V. Light at Wakefield, 19/6; A.M.R.H. One larva at Wakefield taken to J.Ho. on 30/8.
- Herse convolvuli* L. (Convolvulus Hawk). One was taken into the Waterdale Museum and Art Gallery, Doncaster, in early September; E.F.G.
- Scoparia truncicolella* St. Golden Acre, Leeds, on pine trunks, July; J.H.F.
- Philedone gerningana* Schiff. Grassington, 24/7; C.C.S.
- Pandemis corylana* Fab. Chapel Allerton, August; J.H.F.
- P. cerasana* Hueb. Common at Chapel Allerton, Leeds, July and August; J.H.F.
- Eulia ministrana* L. Chapel Allerton, Leeds, July; J.H.F.
- Cnephasia osseana* Scop. Grassington, 24/7; C.C.S.
- Peronea emargana* Fab. Golden Acre, Leeds, 8/8; J.H.F.
- Gypsonoma sociana* Haw. Golden Acre, Leeds, July; J.H.F.
- Eucosma cynosbatella* L. Chapel Allerton, Leeds, July; J.H.F.
- E. nisella* Clerck. Golden Acre, Leeds, 8/8; J.H.F.
- Argyroplote betulaetana* Haw. Adel, Leeds, 6/8; J.H.F.
- Carcina quercana* Fab. Commonly on oaks, Gledhow Valley, Leeds, July; J.H.F.

Hemiptera (J. H. Flint): The poor weather of the late summer and autumn once again made the collecting of Hemiptera difficult, and with the exception of the water-bugs there is little to report in the Heteroptera. The most interesting specimen to be taken was a single male of the water-bug *Cymatia coleoptrata* (F.) at Barnbow, near Leeds, on August 14th. A careful search on 2/10/57 failed to reveal further specimens, but *C. bonsdorffi* (Sahl.) was present then in large numbers. Neither of these bugs was known in Yorkshire until 1950 when *C. coleoptrata* was taken in the Pocklington canal, subsequently being found at Wentbridge, while the only other known locality in the county for *C. bonsdorffi* is Skipwith Common. These few records for two distinctive Corixids contrast strongly with the large number of records for other species in the family.

Where not otherwise stated, the records below are those of the writer.

HETEROPTERA

- Chilacis typhae* (Perr.) (62). Abundantly in *Typha* heads at pond near Easingwold, 7/7/57; E. W. Aubrook.
- Corixa fossarum* Leach. (64). Bramhope ponds, Leeds, 7/10/57.
- C. carinata* (Sahl.) (64). Fountains Fell Tarn, 9/57. Commonly all round the tarn which has a stony bottom, but not found in the peat pools on the Fell where *C. wollastoni* D. and S. was the common species. *C. carinata* is a northern bug, previously taken in the county on Kirby Fell, Cronkley Fell and in Upper Wensleydale.
- C. dorsalis* Leach. (64). Specimens from Bramhope, 4/52, Askwith Moor, 11/50, Bramhope, 8/49, Malham Tarn, 9/57 and Barnbow, 10/57, were examined and proved to be this species.

HOMOPTERA

- Idiocerus fulgidus* (F.) (*64). Golden Acre Park, Leeds, 8/56.
- Aphrodes flavostriatus* (Don.) (*64). Malham Tarn Moss, 9/57.
- Kelisia vittipennis* (Sahl.) (*64). Malham Tarn, 9/57.
- Aphalara exilis* (W. and M.) (*64). Malham Tarn, 9/57, on *Rumex acetosella*; W.D.H. and J.H.F.

Hymenoptera (W. D. Hincks): Insects are so greatly affected by climatic conditions that the entomologist inevitably finds himself associated with that group of people who talk about the weather. The deterioration which followed an open winter and favourable spring adversely affected the Aculeate Hymenoptera particularly, and the summer broods of the sawflies, as far as the recorder's limited experience went, were almost non-existent. As a result of the mild winter and spring a very high percentage of the winter eggs of aphids hatched and large populations were soon built up. Their Hymenopterous parasites, such as the Aphidiids, as well as predaceous Coccinellidae, etc., were plentiful earlier in the season than normal and their numerical increase followed the build-up of the aphid populations. The adverse weather of July onwards brought this process to a close with the rapid reduction of the host colonies.

The Solomon's Seal sawfly (*Phymatocera aterrima* (Klug)) has long been known in the south as a serious pest of its foodplant but it was only in 1948 that it first appeared in the north, in Cheshire, and by 1951 it had spread to South Lancashire. I was therefore very interested to receive larvae of this species earlier in the year from Mr. Haxby, from the Bradford district. This is the first Yorkshire record that has come to my notice but, as might be expected, investigation revealed that Solomon's Seal had been attacked in the county for some time. Through the kind efforts of Mr. Haxby and Mr. Wilfrid Robertshaw of the Bradford Museum, together with suitable publicity in several local newspapers, a total of thirty reports of its occurrence have been collected by Mr. Robertshaw indicating widespread attacks, some over several years. Reports were sent in from the following localities: Shipley, Baildon, Otley, Menston and Pool-in-Wharfedale, Oakworth near Keighley, Halifax, Huddersfield, Mirfield, Leeds (Headingley, Moortown, Meanwood), Bardsey, Walton near Wakefield, and Malton. Most of the correspondents gave 1956 as the first season during which they had noted the pest in their gardens, others had noticed it for the first time this year, perhaps because of the publicity. A smaller number put the date of its first appearance as three or several years ago. I am particularly grateful to Messrs. Haxby and Robertshaw for obtaining this information for me.

A fair amount of collecting has been possible in the county this season though Malham continues to be the main focus of effort. Many interesting species have now been collected in the Malham area and it is hoped that the reports now in preparation will reveal fully the activities of the Section in that district. One outstanding Malham capture this season may be mentioned. The fourth British record of the brachypterous montane ichneumon *Aptesis castanea* (Marshall) was made during August when Miss L. K. Ward, a member of my 'Insect Course' at the Field Centre found a female on an umbell in Tarn Fen. Originally described in 1867 from two specimens taken at about 3,500 ft., on Garbhavel near Loch Rannoch, it was subsequently recorded from Goatfell, Arran, as taken about the same period (1866). It was not seen again until I noted its occurrence on Pen-y-ghent at about 2,000 ft. (1945, *J. Soc. Brit. Ent.*, 2, 244-7). My thanks are due to Miss Ward for allowing me to add the Malham to the Pen-y-ghent specimen in the Manchester Museum.

In early September at Wrea Head (V.C. 62) four or five species of Psocoptera were in great numbers and the females were laying their egg clusters, protected by a white silken covering, on the leaves of many deciduous trees and bushes and also on rhododendrons. Some of the egg-batches were parasitised by egg-parasites of the genus *Alaptus* (family Mymaridae). The first adult parasites appeared towards the end of September and continued until early October. Others may perhaps over-winter in the host-eggs and appear next spring. Those so far emerged belong to *Alaptus pallidicornis* Foerster, a species not previously recorded as British. The recorder is completing a revision of the British species of the genus *Alaptus* which it is hoped to publish shortly.

Thanks are due to Dr. E. Broadhead, Mr. S. Shaw and Mr. W. Beck for material for identification. During the year a number of new county and vice-county records have been made which will be offered for publication at a later date.

Diptera (K. G. Payne): Flies of most of the families in which the writer is interested, and especially of Tipulidae and Empididae, appeared to him to be much scarcer than usual, especially in May and June. Very few specimens of *Empis chioptera* Mg. were to be found on the blossom of fruit trees in Copmanthorpe, for instance. Mr. Russell, though, considers that the year has been a fairly good one from the dipterist's point of view and that what good weather there was coincided

with the emergence of adult flies. He took some 200 species during May and June. It may be that shortage of opportunities for collecting this year has biased the writer's views on relative abundance.

During the year Mr. Russell has published two interesting notes on Agromyzid species. The first is in *Ent. mon. Mag.*, No. 210, June, 1957, p. 144, and records the first specimens of *Phytomyza rydéniana* Hg. bred in this country, from *Cirsium heterophyllum* (L.) Hill from Malham Tarn. The other, in the October *Naturalist*, 1957, p. 136, records *Liriomyza eupatorii* Kalt., a species recorded as mining *Eupatorium cannabinum* L. and *Galeopsis* spp. from Malham Tarn. This is the second British record.

There follows below a list of some of the more interesting species recorded during the year. The writer is indebted to Mr. Russell for supplying a list of those taken and determined by Mr. C. H. Wallace Pugh (marked C.H.W.P.). The other initials are those of Mr. Russell and the writer.

TIPULIDAE

Molophilus appendiculatus Staeger (62). Abundant at Fen Bog, Goathland, 13/7/57; K.G.P. Previously recorded in V.C. 62 by F. W. Edwards, from Mulgrave Woods.

STRATIOMYIDAE

Oxycera pygmaea Fln. (64). Ha Mire, Malham, 21/7/56; H.M.R.

EMPIDIDAE

†*Rhamphomyia stigmata* Mcq. (64). Tarn Moss, Malham, 1 ♂, 23/7/56; H.M.R.

DOLICHOPODIDAE

Scellus notatus Fabr. (64). Temple Newsam, Leeds, swept in large numbers from bracken, 16/6/57; H.M.R.

Schoenophilus versutus Wlk. (64*). Great Close Mire, Malham, 27/7/56; C.H.W.P.
†*Medeterus jaculus* Fln. (61). Spurn, on walls of blockhouse, Kilnsea Saltings, 17/7/52, 3 ♂ ♀; K.G.P.

†*Ziphandrium fasciatum* Mg. (64). Askham Bog, 30/5/53; K.G.P.

Syntormon pumilus Mg. (62*). Pond Head, Yearsley, 18/7/53, ♂ ♂. Naburn York, 21/6/53, ♂ ♀; K.G.P.

Ectomus alpinus Hal. (61*). Garrowby Hall, swept by the little weir at the lower end of the lake, 6/7/57, ♂; K.G.P.

†*Sympycnus dessoutieri* Par. (64). Malham, Great Close Mire, 27/7/56; C.H.W.P.
Malham, Tarn Fen, 22/7/56; H.M.R.

PIPUNCULIDAE

†*Verrallia villosa* v. Roser. (64). Malham, Spiggott Hill Plantation, 20/7/56; H.M.R.

SYRPHIDAE

Orthoneura brevicornis Lw. (64). Malham, Spiggott Hill Fen, ♀, 23/7/56; H.M.R.

SAPROMYZIDAE

Calliopum aeneum Fln. (64). Scarcroft, Leeds, 27/6/57, Roundhay Park, Leeds, 13/9/57; H.M.R.

Lauxania cylindricornis F. (64*). Temple Newsam Woods, Leeds, 2/6/57. Fairly common by sweeping under Oak trees; H.M.R.

SEPSIDAE

Themira superba Hal. (61*). Garrowby Hall, swept by the little weir at the lower end of the lake, 6/7/57, ♂ ♀; K.G.P.

T. lucida Staeg. (64*). Malham, Great Close Mire, 27/7/56, ♂ ♂; C.H.W.P.

CLUSIIDAE

†*Clusiodes gentilis* Coll. (64). Malham, Tarn House Plantation. Several males taken from felled and rotting ash, 29/7/56; C.H.W.P.

SPHAEROCERIDAE

- Stratioborborus nitidus* Mg. (64). Malham, Fountains Fell, 21/7/56, 1♀; C.H.W.P.
Spinotarsella humida Hal. (61*). Garrowby Park, by the lake, 6/7/57; K.G.P.
Chaetopodella scutellaris Hal. (62*). Goathland, Fen Bog, sheep dung, 13/7/57; K.G.P.
Coprophila lugubris Hal. (62*). Goathland, Fen Bog, sheep dung, 13/7/57; K.G.P.

DROSOPHILIDAE

- †*Chymomyza distincta* Egg. (64). Temple Newsam Woods, Leeds, 22/9/56; H.M.R.
 †*Parascaptomyza disticha* Duda (64). Malham, Tarn Close, 10/9/57. Leeds, Roundhay Park, 13/9/57; H.M.R.
Drosophila fenestrarum Flin. (64*). Scarcroft, 19/9/57. Hook Moor, 23/4/57; H.M.R.
D. funebris F. (64). Malham, Spiggott Hill Fen, 12/9/57; H.M.R.

CHLOROPIDAE

- Elachiptera tuberculifera* Corti. (64*). Scarcroft, 19/9/57; H.M.R.
Meromyza pratorum Mg. (64). Scarcroft, 28/6/57; H.M.R.

CORDILURIDAE

- Leptopa filiformis* Ztt. (64). Malham, Tarn Moss, 1♀, 23/7/56; H.M.R.
Norellisoma lituratum Mg. (64). Malham, Tarn Moss, 1♀, 23/7/56; C.H.W.P.
Spathiphora hydromyzinae Flin. (64). Malham, Tarn Shore East, 1♀ on tarn-side mud, 26/7/56; C.H.W.P.

CALLIPHORIDAE

- Lucilia illustris* Mg. (64). Malham, Spiggott Hill Fen, 2♀, 21/7/56; C.H.W.P.

ANTHOMYIIDAE

- Spilogona baltica* Ringd. (64). Tarn Moss, Malham, ♂♀, 25/7/56; C.H.W.P.
S. solitaria Coll. (64). Malham, Tarn Shore East. A few of both sexes; C.H.W.P.
Helina consimilis Flin. (64). Malham, Tarn Moss Fen. Several males on trees bordering fen, 24/7/56; C.H.W.P.

Plant Galls (E. F. Gilmour): the bad weather during 1957 may have prohibited as much field work as usual, and may have caused poor results in some branches of entomology. Plant galls, however, have been very abundant this year, and a selective list of some of these is given below.

The initials, apart from the Recorder's, in the following list stand for the following persons: F. E. Branson (F.E.B.), Miss C. M. Rob (C.M.R.).

	Agent	Plant
COLEOPTERA	<i>Apion assimile</i> Kirby (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.).	<i>Trifolium pratense</i> Linn.
HYMENOPTERA	<i>Pontania proxima</i> (Lepel.) (62), near Swale, -/9/57 (C.M.R.); (64), Fairburn Ings, Castleford, 18/7/57 (C.M.R.); River Ure, near Ripon, 18/8/57 (F.E.B.).	<i>Salix fragilis</i> Linn.
	<i>P. proxima</i> (Lepel.) (64), near Hampsthwaite, near Harrogate, 8/8/57 (F.E.B.); Farnham Mires, near Knaresborough, 29/8/57 (F.E.B.).	<i>Salix atrocinerea</i> Brot.
	<i>Pteronidea salicis</i> (Linn.) (64), River Ure, near Littlethorpe, 18/2/57 (F.E.B.); near Ripon, 18/8/57 (F.E.B.); (62), near Swale, -/9/57 (C.M.R.).	<i>Salix purpurea</i> Linn.
	<i>Rhodites nervosus</i> (Curtis) (64), Potteries, Littlethorpe, near Ripon, 18/8/57 (F.E.B.).	<i>Rosa canina</i> Linn.

- HYMENOPTERA
(continued)
- R. rosae* (Linn.) (62), Catton, Thirsk, 6/8/57 (C.M.R.); (64), near Smeaton, near Harrogate, 22/8/57 (F.E.B.); Ripon, 22/8/57 (F.E.B.); Farnham Mires, near Knaresborough, 29/8/57 (F.E.B.). *Rosa canina* Linn.
- R. eglanteriae* Hartig. (62), Catton, Thirsk, 6/8/57 (C.M.R.); (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.). *Rosa canina* Linn.
- Andricus curvator* Hartig. (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.). *Quercus robur* Linn.
- A. globuli* (Hartig.) (62), Catton, Thirsk, 23/7/57 (C.M.R.). *Quercus robur* Linn.
- A. fecundator* (Hartig.) (61), Skipwith Common, 3/9/57 (E.F.G.). *Quercus robur* Linn.
- Trigonaspis renum* (Hartig.) (61), Skipwith Common, 3/9/57 (E.F.G.). *Quercus robur* Linn.
- Cynips divisa* Hartig. (61), Skipwith Common, 3/9/57 (E.F.G.). *Quercus robur* Linn.
- C. kollari* (Hartig.) (61), Skipwith Common, 3/9/57 (E.F.G.); (62), Catton, Thirsk, 23/7/57 (C.M.R.); (63), Bessacarr, Doncaster, -/7/57 (E.F.G.). *Quercus robur* Linn.
- Neuroterus lenticularis* (Oliv.) (61), Skipwith Common, 3/9/57 (E.F.G.); (62), Catton, Thirsk, 23/7/57 (C.M.R.); (64), Ripon Canal, near Littlethorpe, 18/8/57 (F.E.B.); (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.); (64), Ripon Canal, near Littlethorpe, 18/8/57 (F.E.B.); (63), Bessacarr, Doncaster, -/7/57 (E.F.G.). *Quercus robur* Linn.
- N. numismalis* (Geoffr.) (61), Skipwith Common, 3/9/57 (E.F.G.); (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.). *Quercus robur* Linn.
- DIPTERA
- Rhabdophaga rosaria* (Loew.) (64), Fairburn Ings, Castleford, 18/7/57 (C.M.R.). *Salix fragilis* Linn.
- Dasyneura sisymbrii* (Schrank) (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.). *Sisymbrium officinale* Linn.
- D. catraegi* (Winn.) (64), Potteries, Littlethorpe, near Ripon, 18/8/57 (F.E.B.). *Crataegus monogyna* Jacq.
- D. ulmariae* (Bremi-Wolf) (64), Potteries, Littlethorpe, near Ripon, 18/8/57 (F.E.B.); Sawley Lake, near Sawley, 18/8/57 (F.E.B.); Farnham Mire, near Knaresborough, 29/8/57 (F.E.B.); near Swale, -/9/57 (C.M.R.). *Filipendula ulmaria* Linn.
- D. fraxini* (Kieff.) (65), Cover Bridge, Middleham, 19/9/57 (C.M.R.). *Fraxinus excelsior* Linn.
- D. ranunculi* (Bremi-Wolf) (64), near Swale, -/9/57 (C.M.R.). *Ranunculus acris* Linn.
- Wachtliella persicariae* (Linn.) (64), Ripon, 22/8/57 (F.E.B.); (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.). *Polygonum amphibium* Linn.
- Jaapiella veronicae* (Vallot) (64), near Swale, -/9/57 (C.M.R.). *Veronica chamaedrys* Linn.

DIPTERA

(continued)

- Iteomyia capreae* (Winn.) (64), River Skell, Mackershaw Wood, near Ripon, 12/8/57 (F.E.B.). *Salix caprea* Linn.
Rondaniola bursaria (Bremi-Wolf) (65), Cover Bridge, Middleham, 19/9/57 (C.M.R.). *Glechoma hederacea* Linn.
Macrodiplosis dryobia (Loew.) (63), Bessacarr, Doncaster, -/7/57 (E.F.G.). *Quercus robur* Linn.
Lonchaea parvicornis Meigen. (65), Langton, 8/9/56 (C.M.R.). *Agropyron repens* Linn.

HOMOPTERA

- Livia juncorum* (Latr.) (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.). *Juncus articulatus* Linn.
Trioza galii Foerster (62), Catton, Thirsk, 23/7/57 (C.M.R.); (64), near Swale, -/9/57 (C.M.R.). *Galium aparine* Linn.
Acyrtosiphon carnosum (Buckton) (? = *urticae* Fabr.) (62), Catton, Thirsk, 23/7/57 (C.M.R.); (64), near Swale, -/9/57 (C.M.R.). *Urtica dioica* Linn.
Cavariella aegopodii (Scop.)? (65), Langton, 8/9/57 (C.M.R.). *Aegopodium podagraria* Linn.
Rhopalosiphum padi (Linn.) (62), Catton, Thirsk, 23/7/57 (C.M.R.). *Prunus avium* Linn.
Brachycolus stellariae (Hardy.) (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.). *Holcus mollis* Linn.
B. stellariae Hardy. (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.); (62), Catton, Thirsk, 23/7/57 (C.M.R.). *Stellaria holostea* Linn.
Byrsocrypta spirothecae (Pass.) (64), Farnham Mires, near Knaresborough, 29/8/57 (F.E.B.). *Populus nigra* Linn.
Lepidosaphes ulmi (Linn.) (61), Skipwith Common, -/8/57 (C.M.R.). *Calluna vulgaris* Linn.

ACARI

- Eriophyes macrorrhynchus* Nalepa. (62), Catton, Thirsk, 23/7/57 (C.M.R.); (64), River Skell, Mackershaw Wood, near Ripon, 18/8/57 (F.E.B.). *Acer pseudoplatanus* Linn.
E. pyri Pagenst. (62), Catton, Thirsk, 23/7/57 (C.M.R.). *Pyrus communis* Linn.
E. similis Nalepa. (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.). *Prunus spinosa* Linn.
E. laevis Nalepa. (64), Gormires Wood, Hampsthwaite, near Harrogate, 8/8/57 (F.E.B.); Sawley, -/8/57 (F.E.B.); near Swale, -/9/57 (C.M.R.). *Alnus glutinosa* Gaertn.
E. crataegi Can. (64), Potteries, Littlethorpe, near Ripon, 18/8/57 (F.E.B.). *Crataegus monogyna* Jacq.
E. nalepai Focken. (64), Farnham Mires, near Knaresborough, 29/8/57 (F.E.B.). *Alnus glutinosa* Gaertn.
Phyllocoptes populi Nalepa. (65), Leckby, near Topcliffe, 5/8/57 (C.M.R.). *Populus tremula* Linn.

FUNGI

- Exoascus deformans* Fückel. (62), Catton, Thirsk, 23/7/57 (C.M.R.). *Prunus persica* Linn.

BOTANY

(Miss C. M. Rob): The reports from various parts of the county all tell of a year of extremes. Following a winter notable for its absence of severe frost, spring flowers were early but the cold winds and very dry weather had an adverse effect on most plant life and by June many grass fields were brown and scorched and hay prospects poor. Early July brought rain which persisted during the summer months. Many grasses have flowered a second time, as have other plants and every local report mentioned some species which was having a 'second bloom'. Flowering has also gone on late owing to the absence of any September frost. Fruiting of trees has been below normal generally. Ash has failed everywhere and in most parts there are no acorns. Beech too has missed in most places. Reports of very heavy crops of seedling beech are general.

Plant Records (Miss C. M. Rob): A large number of plant records has come in and the choice of what should appear has been difficult. All records are filed and the card index is available for any interested person to consult.

The B.S.B.I. mapping cards were used on most of the field meetings and added to the botanical interest of the excursions. Members are reminded that next year is the last for field records, and there is still much of Yorkshire to be 'mapped'.

Reports of the meetings have appeared in *The Naturalist*. The outstanding plants noted on the field meetings being *Valerianella carinata* on the Whitsun meeting at Leyburn (also recorded from near Grass Woods by Miss Kneller of the Croydon Natural History Society), *Eleocharis multicaulis* and *Carex limosa* on the Newtondale meeting.

Mr. Shaw has paid attention to the two *Calystegias* and finds the alien *C. sylvestris* is now more common than *C. sepium* in the West Riding. The same applies to these two species in North Yorks. He also points out that all the Water Figworts in the Shipley district are *Scrophularia nodosa*, *S. aquatica* being absent. This opens up two possible distribution problems for further investigation by other members of the section in the coming season.

There has been much attention paid to the alien flora of the county; more than 70 species have been noted many of them introduced with wool though a fair number are from other sources. Both *Epilobium pedunculare* Cunningham and *Veronica filiformis* Smith are spreading while *Claytonia alsinoides* Sims is now in V.C. 62. *Datura stramonium* L. has appeared in a dozen places. The occurrence of *Cochlearia danica* L. on railway ballast between Skipton and Grassington is of interest. Although a native plant it is clearly alien in this station and its recent spread along railway tracks in the Midlands is mentioned in D. E. Allen's *Flora of Rugby* (1957, p. 9).

I should like to thank all those who have helped by sending in records. It would be very much easier for the botanical section Secretary if in future all who have notes and records would send them in at least three weeks before the sectional meeting, i.e. early in September, and not wait for a reminder to be sent out.

* = New Vice-County Record.

Ceterach officinarum DC. (64). Silsden; W. Jarman. Giggleswick; A. Chater. (65).

Between Hawes and Hawes Junction; C. M. Rob.

Juniperus communis L. (62). Near Newtondale; R. Bartlett.

Ranunculus sardous Crantz (61). Sutton Road, Hull; E. Crackles.

Hypericum dubium Leers (65). Fairmile near Lowgill; D. R. Grant and G. A. Shaw.

H. pulchrum L. (61). Near Cowlam and Staxton on the chalk; E. Crackles.

Minuartia tenuifolia (L) Hiern (65). Leyburn; Y.N.U. Meeting.

Euonymus europaeus L (63). Dowley Gap, Bingley; G. A. Shaw.

Alchemilla minor Huds. (65). Leyburn; Y.N.U. Meeting.

A. vestita (Buser) Raunk. (61). Hull; E. Crackles.

A. glabra Neyg. (61). Bishop Wilton, Riseby, North Newbald, Howsham; E. Crackles.

Potentilla argentea L. (64). Near Spofforth but not the Cropper-Braham Hall or Plumpton locality; D. Walker.

Sedum villosum L. (64). Swarth Moor, near Helwith Bridge; G. S. Shaw.

Chrysosplenium oppositifolium L. (61). Wharram; P. Gardam and E. Crackles.

Epilobium adnatum Gris. (det. G. M. Ash) (61). Kelsey and Burstwick Gravel Pits, Y.N.U., 1955; E. Crackles. The record of this for Langwith Common in last year's report should have been *E. obscurum*.

Apium inundatum (L) Rchb. (64). Near Clapham; J. N. Frankland.

- Polygonum viviparum* L. (64). Sulber, Ingleborough; Mrs. Draper.
Polemonium caeruleum L. (65). Dale Head scar; D. Piggott.
Anagallis tenella (L.) Murr. (61). Heslington Fields; E. Crackles.
Scrophularia umbrosa Dum. (64). Shipley, Bingley, Denton, Bolton Abbey, Gisburn, between Skipton and Gargrave; G. A. Shaw. Burley-in-Wharfedale; Mrs. Draper.
S. vernalis L. (65). Leyburn; Miss Robinson per J. P. Utley.
Salvia horminoides Pourr. (63). Little Smeaton; F. Murgatroyd.
Scutellaria minor L. (61). Still at Brighton Common; W. A. Sledge and G. A. Nelson.
Jasione montana L. (61). Between Bielby and Allertorpe; E. Crackles.
Galium uliginosum L. (61). Sherburn and Flotmanby Carrs; E. Crackles.
Valerianella carinata Lois. * (64). Near Grass Woods; Miss Kneller per Dr. Young. (65) Wensley; Y.N.U. Leyburn Meeting.
Lactuca virosa L. (61). Hedgebank west of Bubwith; G. A. Nelson and W. A. Sledge.
Potamogeton obtusifolius Mert. and Koch (64). Shaw Mills; F. E. Branson.
Juncus compressus L. (64). Near Ripon; F. E. Branson. Near Bentham; G. W. Garlick.
Eleocharis multicaulis (Sm.) Sm. (62). Fen Bog; Y.N.U. Goathland Meeting.
Isolepis setacea (L.) R.Br. (61). Near Pocklington; E. Crackles. (63). High Hoyland and Gunthwaite; G. B. Wakefield.
Carex limosa L. (62). Fen Bog; Y.N.U. Goathland Meeting.
C. vulpina L. * (61). Norton near Malton; T. F. Medd, det. E. C. Wallace.
C. divulsa Stokes (64). Ripley; F. E. Branson.
C. contigua Hoppe. (63). Cooper Bridge, Halifax; F. Murgatroyd.
C. pairaei Schultz (64). Ripley; F. E. Branson.
Glyceria declinata Breb. (64). Burley Woodhead; Mrs. Draper.
G. fluitans (L.) R.Br. x *G. plicata* Fr. (64). Burley Woodhead; Mrs. Draper.
Bromus racemosus L. * (61). Withernwick; E. Crackles, det. Hubbard.

ALIENS, CASUALS, ETC.

- Cardaria draba* (L.) Desv. (63). Fairburn nature reserve; W. C. Wakefield.
Cochlearia danica L. (64). Railway between Skipton and Grassington; R. L. Illingworth.
Erysimum cheiranthoides L. (63). Shipley; Mrs. F. C. Draper and Mrs. F. Houseman. (65). Kirby Fleetham; C. M. Rob.
Descurainia sophia (L.) Prantl. (61). Winteringham; E. Crackles.
Agrostemma githago L. (61). Cornfield between Winteringham and Rillington; E. Crackles.
Claytonia alsinoides Sims. (62). Bransdale; Darlington Naturalists. (65). Keld and Cotterdale; Darlington Naturalists. (64). Hampsthwaite; F. E. Branson.
Chenopodium murale L. (62). 'Shoddy field', near Topcliffe Station; C.M.R. and M. Mc Webster. (63). Shipley; Mrs. Draper and Mrs. Houseman. (64). Boroughbridge; C.M.R.
Erodium moschatum (L.) L'Heritier (62). Near Topcliffe Station; C.M.R. and M. Mc Webster. (63). Shipley; Mrs. Draper and Mrs. Houseman.
E. botrys (Cav.) Bertol. and *E. cygnorum* Nees. (62). Topcliffe, with the preceding; C.M.R. and M. Mc W.
Impatiens parviflora DC. (63). Bretton; G. B. Wakefield.
Medicago laciniata (L.) Miller and M. *praecox* DC. (62). Near Topcliffe Station; C.M.R. and M. Mc W. (63). Shipley; Mrs. Draper and Mrs. Houseman.
T. angustifolium L. (62). Catton, and near Topcliffe Station; C.M.R. and M. Mc W.
T. incarnatum L. (62). Catton; C.M.R. (63). Barnsley, 1956; Barnsley Naturalists.
T. subterraneum L. (62). Near Topcliffe Station and Catton; C.M.R.
Coronilla varia L. (63). Elland; F. Murgatroyd.
Alchemilla conjuncta Bab. (63). Old Quarry, Bradley; F. Murgatroyd, det. M. Walters.
Tolmeia menziesii (Pursh.) Torrey and Grey (64). Old Quarry, Aldborough, near Boroughbridge; Mrs. Z. Worsley.
Epilobium pedunculare Cunningham. (64). Skipton; Craven Naturalists. Near Kirby Malzead; Mrs. Dinwiddie, per C.M.R. (65). Coverbridge; C.M.R.
Bupleurum rotundifolium L. (64). Garden weed, Burley Woodhead; Mrs. F. Draper.
Primula florinda Kingdon Ward. (61). West Heslerton, 'well established'; E. Crackles.

- Pulmonaria officinalis* L. (64). River bank near Knaresborough; F. E. Branson.
Verbascum virgatum Stokes (64). Burley-in-Wharfedale; Mrs. F. Draper.
Linaria repens (L.) Mill. (63). Henley, near Huddersfield; G. B. Wakefield
Mimulus moschatus Lindley (64). Burley Woodhead; Mrs. F. Draper. Shaw Mills;
 F. E. Branson.
Veronica filiformis Sm. (62). River bank, Maunby; C.M.R. and M. Mc W. (64).
 Littlethorpe; F. E. Branson. (65). Whaw, Swaledale; C.M.R.
Lonicera xylosteum L. (64). Denton; Mrs. Draper and Mrs. Houseman.
Bidens bipinnata L. (62). Near Topcliffe Station; C.M.R. and M. Mc W.
Helianthus annuus L. (64). Burley-in-Wharfedale; Mrs. Draper.
Senecio squalidus L. (63). Fairburn Nature Reserve; W. C. Wakefield.
Galinsoga ciliata (Rafn.) Blake (64). Otley; Mrs. Houseman.
Petasites albus (L.) Gaertn. (63). Elland; F. Murgatroyd.
Petasites fragrans (Villars) Presl. (62). Kewick; C.M.R. (63). Ainley Wood, Elland;
 F. Murgatroyd.
Inula helenium L. (64). Burley Woodhead; Mrs. Draper.
Conyza canadensis (L.) Cronq. (64). Old sandpit, Tadcaster; E. Thompson. Jackdaw
 Crag, Tadcaster, and Quarry Moor, Ripon; F. E. Branson.
Anthemis tinctoria L. (61). Sandpit, Staxton; E. Crackles.
Silybum marianum (L.) Gaertn. (62). Near Topcliffe Station; C.M.R. and M. Mc W.
Centaurea dilula Aiton (64). Burley Woodhead; Mrs. Draper.
Lilium martagon L. (61). Eppleworth; E. Crackles.
Muscari racemosus (L.) DC. (64). Near Queen Mary's Dubb, Ripon; F. E. Branson.
Festuca heterophylla Lam. (64). Burley-in-Wharfedale; Mrs. Draper.
Bromus madritensis L. (63). Shipley; Mrs. Houseman and Mrs. Draper.
Hordeum leporinum Link. (62). Near Topcliffe Station; C.M.R. and M. Mc W.
 (63) Idle; Mrs. Draper and M. Mc Webster.
H. jubatum L. (63). Idle; Mrs. Draper and M. Mc Webster.
Alopecurus myosuroides Huds. (64). Gale Green, Ingleton; G. W. Garlick. Ben
 Rhydding; Mrs. Draper.

Bryology (G. A. Shaw): Two bryological meetings have been held during 1957 at Aberford in April and in the upper Lune Valley in September. Conditions at Aberford were extremely dry for bryophytes, which were as a result not in a very good state for identification in the field. Perhaps the most interesting find was *Distichium capillaceum* (Hedw.) B. and S., growing on a very dry and exposed bank along with *Campylium chrysophyllum* (Brid.) Bryhn and *Dicranella varia* (Hedw.) Schp. This locality, at an altitude of only 150 ft., is quite the lowest recorded in the register, which gives no locality south of Bolton Abbey.

In contrast to Aberford, conditions at our meeting in the Lune valley were very wet, and as a result the bryophytes were looking their best. We were able to hold a meeting in this remote part of the county by making use of the special ramblers' excursion to Low Gill, and we crossed over into Yorkshire via the Crook of Lune bridge, and then worked upstream to just beyond Fair Mile Beck. Examination of the material collected has scarcely begun, though it is not thought that anything of great note was found.

The section has gained a most enthusiastic member in the person of Mr. F. E. Branson, of Harrogate, who has been collecting indefatigably throughout the year and has submitted many records, many of which I have entered in the register, and a few are mentioned in the body of this report. A visit to Skipwith Common on Good Friday produced *Dicranum spurium* in its well-known locality between Skipwith and Thorganby (both it and *D. undulatum* were seen here by Mrs. Appleyard and Mr. Lewis in 1952). *Acrocladium stramineum* (Brid.) Richards and Wallace still occurs on the Common—the last date for this in the register is 1898—and *Ptilidium ciliare* (L.) Hampe is still there in one of its few East Riding stations. On Easter Monday I paid another visit to Whernside to search for *Aulacomnium turgidum*, found only once by Lees and West in 1878 and never seen since. Needless to say I met with no success. There was an abundance of *Dicranodontium denudatum* (Brid.) E. G. Britton var. *alpinum* (Schp.) Hagen on White Shaw Moss at the head of Kingsdale. Also seen about here were *Splachnum ovatum* Hedw. and *Drepanocladus exannulatus* (B. & S.) Warnst.

Anthoceros laevis L. was found by Miss L. I. Scott and Mr. H. Walsh in Bramham Park in 1951 in small quantity and was determined on vegetative characters alone.

In October of this year Professor I. Manton found this species in quantity and fruiting abundantly about half a mile from the original site. This is the only known locality in V.C. 64, and there are only two others given for the county in the register, one near Sheffield (63) in 1876, and the second near Ingleby Greenhow (62) in 1947.

The following are the more interesting records:

Riccia fluitans L. (64). Newton Ings near Fairburn; C. M. Rob. This is an interesting find. I note that in the register we have more records for *Ricciocarpus* than for *Riccia fluitans*.

Myrinia pulvinata (Wahl.) Schp. (65). Tree root by the River Ure, Masham, 1948; A. Thompson. New to V.C. 65.

Fissidens rufulus B. & S. (65). Stones in the River Ure, Masham, 1948; A. Thompson. The first Wensleydale record. (64). Stone by the River Ribble between Gisburn and Sawley, 1949; A. Thompson.

The records that follow are all due to Mr. F. E. Branson:

Dichodontium pellucidum (Hedw.) Schp. var. *flavescens* (Turn.) C. Jens. (64). Oak Beck, Birk Crag, Harrogate, and Sand Gill, Pateley Bridge.

Grimmia trichophylla Grev. (64). Wall near Brimham Rocks.

Physcomitrium pyriforme (Hedw.) Brid. (64). Bog near lock, Ripon Canal.

Schistostega pennata (Hedw.) Hook. & Tayl. (64). Still at Guy's Cliff.

Leskea polycarpa Hedw. (64). By the River Ure near Ripon and between Grimston and Tadcaster.

Hygroamblystegium fluviatile (Hedw.) Loeske. (64). Bank of River Ure, near R.E. Camp, Ripon.

Hygrohypnum ochraceum (Turn. ex Wils.) Loeske. (64). Side of a well near Pateley Bridge.

Acrocladium stramineum (Brid.) Richards & Wallace. (64). Brimham Moor.

Hygroamblystegium tenax (Hedw.) Jennings (64). On rocks in a stream at Ripley.

An important paper by a member of the Bryological Section is Mr. H. Walsh's revision of the bryophyte flora of the Halifax Parish as published in Crump and Crossland's *Flora of Halifax*, in which he brings up to date our knowledge of bryophyte distribution in this area. This paper appears in the October-December issue of *The Naturalist*.

Mycology (Miss J. Grainger): The Spring Foray at Thornton-le-Dale was led by Mr. Bramley when a small but keen party again enjoyed verifying and adding to previous records in Kingthorpe, Owdale and neighbourhood.

The autumn foray held at Austwick was attended by 25 members. Though this was the wettest foray ever remembered, students of the different groups expressed themselves as well satisfied with results. The rare *Collybia racemosa* was re-found in the same place in Clapham Woods where we recorded it during the 1949 foray. *Hygrophorus* was well represented and at least three species of Geoglossaceae were seen in fine condition and in considerable quantity. Mr. Orton found the genus *Cortinarius* sufficiently well represented to justify his journey from Scotland to join the foray and his assistance in naming the less familiar species in all groups of the agarics was invaluable. A considerable number of new county and vice-county records resulted, details of which will appear in *The Naturalist* in due course.

Our Chairman, Mr. A. D. Greenwood, gave a most interesting address dealing with the application of modern techniques to the study of water moulds. A cine-photo graph was shown illustrating all stages in the development of zoosporangia and release of zoospores and high magnification electron-microscope photographs were shown illustrating the fine structure of the zoospores and their flagella.

Arrangements for the printing of *Cortinarius* II are now well in hand thanks to generous financial support by certain members and it is hoped that publication will be effected by the end of the year.

The Simmonite-Culpeper Herbal Remedies. Pp. 123, 1 colour-plate. Foulsham & Co., London. 12/6.

This is a re-hash of the worst of Culpeper, worsened by one Simmonite, an early nineteenth century quack. No modern editor or compiler has deemed it worth appending his name to a work fit only for astrologers.

YORKSHIRE NATURAL

INCOME AND

Year ending

INCOME.

£	s.	d.		£	s.	d.
430	7	5	Subscriptions received and due	420	7	8
10	6	9	Sale of Mycological Papers—Russula, etc.	9	12	3
3	7	8	Sale of other publications	5	0	9
—	—	—	Donations—General Fund	2	0	0
29	2	2	Interest received—General Fund	30	7	3

£473 4 0

£467 7 11

BALANCE SHEET

ACCUMULATED FUNDS—GENERAL PURPOSES:

£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.
			100	0	0	Booth Fund	100	0	0			
			100	0	0	Cheeseman Fund	100	0	0			
			250	0	0	R. C. Fowler-Jones Legacy	250	0	0			
			477	0	0	Life Members' Account	477	0	0			
			927	0	0		927	0	0			
			201	13	1	Less Deficit Income and Expenditure Account per contra	186	2	2	740	17	10
725	6	11				MYCOLOGICAL FUND—R. C. Fowler-Jones Legacy:						
			170	3	10	Balance brought forward	30	2	10			
			13	13	0	Sundry Donations	6	7	0			
			33	0	5	Sale of Papers—Cortinarius, etc.	16	5	9			
			50	0	0	Grant towards Cortinarius Part II... ..	—					
			3	2	1	Interest on Deposit Account	—					
			269	19	4		52	15	7			
			239	16	6	Less Cost of Cortinarius Part I	—					
			—			„ Cost of Panaeolus Reprint	2	15	10	49	19	0
30	2	10				Ornithological Fund—W. W. Nicholas				100	0	0
100	0	0				Reserve for Depreciation of Investments				175	0	0

£855 9 9

£1065 17 7

Examined and found correct.

A. C. COLLINGE }
W. BENNETT } *Hon. Auditors.*

ALISTS' UNION

EXPENDITURE ACCOUNT

October 31, 1957

£ s. d.		£ s. d.		EXPENDITURE.		£ s. d.		£ s. d.	
				GENERAL PRINTING:					
		25 12 8		Members' Cards		27 8 7			
		68 3 2		Circulars		83 15 7			
93 15 10								111 4 2	
				Naturalist—					
		275 19 11		Members' and Exchange Copies		315 2 7			
		51 12 7		Cost of Extra Pages		10 14 6			
		4 0 0		Editor's Expenses		5 0 0			
		331 12 6				330 17 1			
		36 15 1		Less Contributions—Cost of Extra Pages, etc. ...		11 15 6			
294 17 5								319 1 7	
				SUNDRY EXPENSES:					
		2 11 0		Bank Charges		3 12 0			
		—		Cost of duplicating 1956 Accounts		0 17 6			
		17 18 11		Officer's Expenses		17 1 9			
		16 11 10		Stationery, etc.		—			
		0 15 0		Rent of Rooms		—			
		10 7 2		New Recording System		—			
48 3 11								21 11 3	
36 6 10				Excess Income over Expenditure				15 10 11	
<u>£473 4 0</u>								<u>£467 7 11</u>	

October 31, 1957

£ s. d.		£ s. d.		INVESTMENTS (Nominal Value):		£ s. d.		£ s. d.	
		100 0 0		Booth Fund—3½% Conversion Stock		100 0 0			
		100 0 0		Cheeseman Fund, 3½% War Stock		100 0 0			
		100 0 0		Nicholas Fund, 3% British Transport		100 0 0			
		200 0 0		General Fund—4% Consols (Bank of England) ...		200 0 0			
		159 10 11		„ „ 4% Consols (P.O.)		159 10 11			
		659 10 11				659 10 11			
		175 0 0		Less Reserve for Depreciation		—			
484 10 11								659 10 11	
269 5 4				Deposit Account—Westminster Bank				278 5 1	
97 8 6				Current Account—Westminster Bank				106 10 1	
		17 17 6		Subscriptions due and unpaid		36 11 6			
		4 12 6		Less Reserve		6 0 0			
		13 5 0				30 11 6			
		9 0 0		Less Subscriptions paid in advance		9 0 0			
4 5 0								21 11 6	
				INCOME AND EXPENDITURE ACCOUNT:					
		80 19 11		Deficit brought forward		201 13 1			
		36 6 10		Less Surplus year to 31/10/57		15 10 11			
		18 0 0		„ Special Contribution last year		—			
		26 13 1				186 2 2			
		175 0 0		Add Reserve for depreciation of Investments ...		—			
		201 13 1		Balance deducted contra		186 2 2			
<u>£855 9 9</u>								<u>£1065 17 7</u>	

YORKSHIRE NATURALISTS' UNION

INCOME AND EXPENDITURE ACCOUNT

Year ending

INCOME.

£	s.	d.		£	s.	d.
480	7	5	Subscriptions received and due	430	7	8
10	6	0	Sale of Mycological Papers—Russula, etc.	9	12	3
3	7	8	Sale of other publications	5	0	0
—	—	—	Donations—General Fund	2	0	0
29	2	2	Interest received—General Fund	30	7	3

£473 4 0

£407 7 11

BALANCE SHEET

ACCUMULATED FUNDS—GENERAL PURPOSES:

£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.
100	0	0	Booth Fund	100	0	0	100	0	0			
100	0	0	Cheeseman Fund	100	0	0	100	0	0			
250	0	0	R. C. Fowler-Jones Legacy	250	0	0	250	0	0			
477	0	0	Life Members' Account	477	0	0	477	0	0			
927	0	0		927	0	0						
201	13	1	Less Deficit Income and Expenditure Account per contra	186	2	2						
725	6	11					740	17	10			
170	3	10	MYCOLOGICAL FUND—R. C. Fowler-Jones Legacy:									
13	13	0	Balance brought forward	30	2	10						
38	0	5	Sundry Donations	6	7	0						
50	0	0	Sale of Papers—Cortinarius, etc.	16	5	0						
8	2	1	Grant towards Cortinarius Part II	—								
269	10	4	Interest on Deposit Account	—								
239	16	6		52	15	7						
30	2	10	Less Cost of Cortinarius Part I	—								
100	0	0	Cost of Panacelus Reprint	2	15	10						
—	—	—		49	19	0						
—	—	—	Ornithological Fund—W. W. Nicholas	100	0	0						
—	—	—	Reserve for Depreciation of Investments	175	0	0						

£855 9 9

£1065 17 7

ALISTS' UNION

EXPENDITURE ACCOUNT

October 31, 1957

EXPENDITURE.

£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.
25	12	8	GENERAL PRINTING:				27	8	7			
68	3	2	Members' Cards	83	15	7						
93	15	10	Circulars				111	4	2			
275	19	11	Naturalist—									
51	12	7	Members' and Exchange Copies	315	2	7						
4	0	0	Cost of Extra Pages	10	14	6						
331	12	6	Editor's Expenses	5	0	0						
36	15	1		330	17	1						
204	17	5	Less Contributions—Cost of Extra Pages, etc.	11	15	6	310	1	7			
2	11	0	SUNDRY EXPENSES:									
17	18	11	Bank Charges	3	12	0						
16	11	10	Cost of duplicating 1056 Accounts	0	17	6						
0	15	0	Officer's Expenses	17	1	0						
10	7	2	Stationery, etc.	—								
48	3	11	Rent of Rooms	—								
36	6	19	New Recording System	—			21	11	3			
—	—	—	Excess Income over Expenditure	—			15	10	11			

£473 4 0

£407 7 11

October 31, 1957

£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.
100	0	0	INVESTMENTS (Nominal Value):				100	0	0			
100	0	0	Booth Fund—31% Conversion Stock	100	0	0						
100	0	0	Cheeseman Fund, 31% War Stock	100	0	0						
100	0	0	Nicholas Fund, 3% British Transport	100	0	0						
200	0	0	General Fund—4% Consols (Bank of England)	200	0	0						
159	10	11	" " 4% Consols (P.O.)	159	10	11						
650	10	11		650	10	11						
175	0	0	Less Reserve for Depreciation	—			650	10	11			
50	5	4	Deposit Account—Westminster Bank	—			278	5	1			
17	17	6	Current Account—Westminster Bank	—			106	10	1			
4	12	6	Subscriptions due and unpaid	36	11	6						
13	5	0	Less Reserve	6	0	0						
9	0	0		30	11	6						
80	19	11	Less Subscriptions paid in advance	—			21	11	6			
36	6	10	INCOME AND EXPENDITURE ACCOUNT:									
18	0	0	Deficit brought forward	201	13	1						
29	13	1	Current Account—Westminster Bank	13	10	11						
175	0	0	Special Contribution last year	—								
201	13	1		186	2	2						
175	0	0	Add Reserve for depreciation of Investments	—			186	2	2			
50	5	4	Balance deducted contra	—			1065	17	7			

£855 9 9

£1065 17 7

Examined and found correct.
A. C. COLLINGE } Hon. Auditors.
W. BENNETT }

A General Textbook of Entomology, by **A. D. Imms**, revised by **Professor O. W. Richards** and **R. G. Davies**. Pp. x + 886, with 609 text figures. Ninth edition. Methuen, 1957. 75/-.

Since the first appearance of Imms' *General Textbook of Entomology* in 1925 it has been the standard English textbook in the subject. No other work covered so wide a field with such thoroughness and the mere fact that it went so deeply into so many aspects of the subject meant that constant revision was necessary if its self-imposed standards were to be maintained. The present edition, the ninth, revised and enlarged by O. W. Richards and R. G. Davies, is a major re-organisation, made necessary by the rapid advance of the subject, and the revising authors have made an exceedingly good job of their task.

The general form of the book remains the same, Anatomy and Physiology, Development, and Systematics. The changes in the anatomy sections bring in much of the work of R. E. Snodgrass, and in the physiology that of V. B. Wigglesworth, and fairly represent the progress of the last 25 years. The sections on physiology are very condensed, but as summaries they are good and lead one directly to the right kind of literature. The systematics sections have been greatly changed and are most impressive in their depth of treatment. Only O. W. Richards could have written the account of the Hymenoptera, but all the groups show the touch of a master hand in systematics. The figures, particularly of wing venation, are fully labelled, and clear decisions are taken in the presentation of controversial material, e.g. we are given a figure of the Ephemeropteran wing showing MA and MP (media anterior and posterior) and are not left to fit it to the text as best we may. The Orthopteroid groups are split into separate orders and most convincingly contrasted with one another. The Termites are given a full and up-to-date treatment, in respect of biology as well as systematics. And so this kind of efficiency of authorship goes on throughout the book. The bibliographies have been brought up to date and re-arranged in the modern form. There are a few misprints, but 886 pages without them would be a miracle. Perhaps the authors will be pleased to hear of them as they are discovered: p. 286, line 28, R_5 should be R_3 ; p. 359, line 15, 80-100 should be 120-184; p. 696, line 20, 3 should be 32.

In spite of the extensive alterations the revisers have not robbed the book of its character and personality; it is still Imms' *General Textbook*. They have made it far more imposing and more useful than the eighth edition and given it a rank in this generation equal to that of the first edition in the last. On the whole the reviewer feels that there is a little too much conservatism in the specialist fields of which he has knowledge, and no doubt other specialists will feel the same. As the revisers say, such opinions are almost inevitable when they have so often been compelled to compromise between old and new. The task of the reviser is hard indeed and that it has been so well and truly done is worthy of the highest congratulations.

This book will remain for many years the standard English textbook in the subject; in the reviewer's opinion it is the best in the language, and every serious student of the subject will have to possess a copy. Whilst not a cheap book it is full value for money and is strongly recommended to all who aspire both to a wide and deep knowledge.

H.H.

General Zoology, by **Tracy I. Storer** and **Robert L. Usinger**. Pp. v + 664 with over 550 illustrations, some in colour. Third edition. McGraw-Hill, 1957. 56/6.

This handsome volume presents a vast amount of information in a manner at once compelling and refreshing. It carries the reader along by its very enthusiasm and on nearly every page the eye alights on a chart, diagram or photograph which enlivens and illuminates the written word. Essentially this is an introductory textbook, though it bears little resemblance to the dry-as-dust tomes often inflicted upon first year university students.

A third of the book deals with general animal biology, and includes chapters on comparative physiology, reproduction, embryology, genetics, ecology, evolution and, of course, the frog as a representative animal. The remaining and larger section is occupied by a systematic survey of the Animal Kingdom in which it is pleasing to find as much space devoted to the habits and natural history of the creatures described as is taken up by the more formal catalogues of their morphological and anatomical features.

The authors have had the subsidiary aim of providing a source of reference and there seems little doubt that they were determined that no aspect of zoology should

remain unmentioned, however briefly. Consequently the book contains much more information than can be utilised by the elementary student, though his appetite may well be whetted, while the striving for comprehensiveness has produced such uneven treatment of the subject matter as, for example, the inclusion of seven pages on the chemical and physical properties of matter, and ten on the classification of birds; surely, in a work of this type, too little of the former and too much of the latter. But these are minor points to set against the vigour of this excellent book.

R.W.O.

Vertebrates of the United States, by W. Frank Blair, Albert P. Blair, Pierce Brodkorb, Fred R. Cagle and George A. Moore. Pp. 820 with over 400 text illustrations. McGraw-Hill, 1957. 90/-

This is no more and no less than a key to the entire vertebrate fauna of the United States and it is a very healthy sign of the state of natural history when so ambitious a project can find a publisher. Each class, order and family is defined, each genus, other than the monotypic ones, and every species is keyed so that from this single volume it should be possible to identify every vertebrate organism over a third of the American continent. Each species is separately defined, its habitat indicated and its known range given and over 400 text figures help to elucidate critical characteristics.

There is not parity of treatment throughout the work for the minnows of the genus *Notropis*, the Shiners, are listed as 95 separate species whereas the equally devious but intergrading Flickers are treated in the ornithological section as a single super-species.

Especially among the birds and to some extent in the mammals, the earlier recognition of many Nearctic forms as separate from their Palaearctic counterparts has broken down with a better understanding of geographic variation and the book, in consequence, includes many species which we own on this side of the Atlantic. Apart from the cetaceans and the seals, the Stoat is the only living British mammal listed, oddly enough with the American sobriquet Short-tailed Weasel, but among the birds are many which, since there is no definition of sub-species, are admitted by the same names which we acknowledge (or can recognise) in our own avifauna. Thus, the Hudsonian Curlew is only our Whimbrel, and the owl which belongs to Richardson in the United States is Tengmalm's in Europe. On the other hand, the Whistling and Trumpeter Swans maintain their integrity whereas it is now more common practice to view them as conspecific with our Bewick's and Whooper.

As usual, the American way of using the genus is to define a difference rather than to express a relationship and many more generic names appear than would be found in an equivalent British list, nostalgic throw-backs in many cases to English terminology of the nineteenth century.

There is a very full glossary and a complete index.

E.H.

Behaviour Mechanisms in Monkeys, by Heinrich Klüver. Pp. xvii + 387 with 52 figures. University of Chicago Press: agents, Cambridge University Press, 1957. 49/- net.

A mother monkey with a still-born baby will not give it up but may carry the little corpse around until it is shrivelled up. We are apt to exclaim with wonder at the intensity of the 'maternal instinct' but this interpretation becomes problematic when we find that she will cling with equal devotion to the body of a dead rat. In seeking to explain the behaviour of animals it is very rash to assign the cause either to known human feelings or to unknown and hypothetical forces. To-day this danger is widely recognised, but a more subtle danger is less easy to detect viz. that of naming as 'the stimulus' that particular feature of the total situation which seems to us most obvious. It would seem obvious that the monkey is responding to what is, to her, her baby. Her behaviour with the rat throws doubt on this description. How then are we to describe the stimulus to which she is responding? Unless we can get the description right we cannot make much headway with the explanation.

This is a very central problem in both human and animal psychology, and Dr. Klüver's book, when it first appeared some 25 years ago, set a new standard in methodology—a standard which revealed some of the limitations in the work of such pioneers as Pavlov and Köhler. This issue of a second impression, even after such a long interval, is timely. For Klüver's methodological scrupulousness and insight are as striking and as deserving of emulation to-day as they ever were.

The animals used in these experiments were Java monkeys, Cebus monkeys, spider monkeys, squirrel monkeys and a lemur. The experiments were so numerous and are described in such fullness of detail that no brief summary can do them justice. This is scarcely a book for the general reader but rather for the specialist in animal psychology. It must suffice to say that in the experiments the animal, in its cage, was presented with two or more boxes containing food. These were at a distance from the cage but could be pulled in by a string within the animal's reach. The boxes were made to differ in various respects such as weight, distance, optical appearance, etc. Systematic changes were introduced into the stimuli and the rates of learning systematically recorded, i.e. learning to choose the right box. Fairly typical experiments on animal learning it may be said, but in a different framework of ideas, with less pre-judging of the issues than has often been displayed in this field. Convinced that explanation of animal learning is premature until the stimuli have been correctly identified Klüver claimed to be making only a first step towards explanation. This is a study of 'those properties which make heterogeneous stimulus constellations "equi-valent" or "identifiable" and which set off the "equivalent stimuli" from others.'

An animal trained to associate, say, a grey stimulus with food, will readily pick out the grey from a constellation of three whites and a grey. If, trained on this constellation, he is then presented with one white and three greys he chooses the white. What here is the effective stimulus? Evidently not the *colour* but the *relation* 'different from the rest'. This is a very simple example of the general theme emerging from these lengthy and painstaking studies, viz. that it is not always the obvious sensory qualities in a stimulus which are effective in determining behaviour but frequently an 'interdependence of aspects' i.e. a *relation*. Perhaps this needs less arguing to-day than 25 years ago, but the step from this to a plausible neural mechanism to account for the perception of a constant relation in a changing sensory constellation is still in the future.

G.P.M.

Animal Ecology, by A. MacFadyen. Pp. xx + 264, with 11 tables, 19 text figures, and 6 plates. Pitman, 1957. 40/-.

The publishers' advertisement says this book is intended primarily to help other biologists to survey the field of animal ecology, its objectives and its methods. The aims of the book having been so stated it is gratifying to be able to say that the author has very effectively reached his objectives. The three main sections of the book are concerned with the study of individual animals, the study of populations, and the study of communities. Within these divisions there are chapters on classification and systematics, habitats, microclimates, animals in relation to vegetation, collecting and sampling, and on statistical analysis of results. The emphasis throughout is on methods and techniques rather than results although these last are not spared when useful as examples.

Professional biologists who are not ecologists will find this book a most valuable and readable introduction to the subject, at a level sufficiently high to be stimulating and informing. Those who are ecologists will find it a useful vehicle for the organisation of their knowledge and a significant contribution to their bookshelves. Amateur naturalists may find much of the book hard going but it should not be beyond the comprehension of anyone with a good school education in science. In any case they will surely get much pleasure from being brought to an appreciation of the more advanced levels of their subject.

The word 'ecology' itself is not easily defined when an attempt is made to separate it from scientific natural history. The author of this book considers that the latter is really concerned with individuals and 'ecology' with populations. It would seem therefore that natural history may be simple, scientific, or more scientific, and that ecologists claim this last as their special province.

The book is highly recommended to all serious biologists and to all amateur naturalists who are prepared to make some effort of intensive study.

H.H.

The Survival of Animals in Hot Deserts. An Inaugural Lecture given in the University College of Rhodesia and Nyasaland, by **Professor E. B. Edney**. Pp. 32. Oxford University Press, 1957. 4/-.

In hot climates, survival depends upon avoiding desiccation and keeping cool. Consequently where water is in short supply, there must inevitably be a conflict

between the requirements of conserving water for vital purposes and of transpiring it for cooling. Professor Edney considers how these opposing needs are brought into equilibrium in different kinds of animals inhabiting desert regions.

In general, small mammals tend to avoid extreme conditions, while larger ones resist them by sweating. In addition, the typical mammalian physiological plan is often modified in desert forms. For example, food reserves are concentrated in the humps of camels and Zebu cattle, and in the fat tails of desert sheep. Restriction of fat to one depot allows the rest of the body surface to act as a radiator, since there is no insulating subcutaneous layer. The camel can tolerate a loss of water up to nearly 25 per cent. of its body weight because water is lost from the tissues only, and the blood volume remains constant. In contrast, a man succumbs after losing a mere 10-12 per cent., because increase in the viscosity of his blood slows down circulation, inhibiting the transport of metabolic heat to the skin.

Arthropods are too small to withstand transpiration for long and therefore can exist only by avoiding true desert conditions. Consequently they inhabit holes, caves and crevices where microclimatic conditions are less extreme.

As the writer of this review has previously pointed out, physiological adaptations to desert conditions involve changes in degree rather than the evolution of new mechanisms. Professor Edney's interesting observations on the desert woodlouse, *Hemilepistus reaumuri*, would appear to support this contention.

For animals, the desert is one of the world's most unfavourable environments. Mammals can live in it because they are large and have developed homeothermy. Arthropods survive by colonising comparatively sheltered niches. J.L.C.-T.

The Grey Seals of the Farne Islands, by Grace Hickling.

The Initiation of a Study of Mortality and Morbidity in the Farne Islands Grey Seals Nurseries, by A. G. Ogilvie. *Transactions of the Natural History Society of Northumberland, Durham and Newcastle upon Tyne.* Pp. 93-136, 5 plates, 3 maps. September, 1957.

Stemming from agitation from fishing interests concerned by the increase in the numbers of the Grey Seal, the Northumberland and Durham Natural History Society undertook to investigate the Farne colony with regard to mortality, movements and general behaviour. Preliminary results suggest that in the past 20 years the colony has increased from about 800 to 3,000 individuals and that the seals are spreading at the breeding season to the Inner Group. Several hundred seals have been tagged, with varying success, but practically all the recoveries have been within the first month of life. A number of calves were weighed and the tables reveal that the birth-weight which is around 30 pounds is roughly doubled by the tenth day.

The second paper is brief and based on so few positive results that no conclusions are offered, the work so far done being regarded as no more than a starting point which will indicate the way to future work.

It is very heartening to see a regional society concerning itself with an investigation of this kind especially because, if any control should prove to be necessary, it will be based upon fact, not prejudice. E.H.

Man and Mammoth in Mexico, by Helmut de Terra. Pp. 191. Hutchinson 1957. 25/-.

The author, who is well known for his archaeological researches in Asia, has, since 1946, been actively engaged in similar work in North and Central America and this volume, written in a popular and attractive style, describes his discovery of the first human fossils to be found in Mexico and the remains of Pleistocene mammalia found with them. It is essentially a travel book and the reader gets a vivid impression of the variety of Mexican scenery, of those wonderful pyramids which testify to bygone cultures and, in a strange contrast, the effect of the remarkable recent eruption of Paricutin. This method of writing prevents a chronological treatment of the history of man in Mexico but a useful appendix summarises events from the last glaciation to the time of the Spanish conquest, the accuracy of dating of the more recent events depending on radio-carbon technique. With clear imagery, the author reconstructs the scenes of the past which his discoveries call forth and one could not imagine a better advertisement for the attractions of archaeological research. There is an important connection between the history of the country deduced from these relics and its present-day development, and in a thoughtful

final chapter the author gives his optimistic view that by studying the lessons of the past the people 'may overcome the earth-curse that had laid upon the land for more than two thousand years'.

H.C.V.

Evolutionary Theory and Christian Belief: The Unresolved Conflict, by David Lack. Pp. 128. Methuen, 1957. 10/6.

Nowadays, the conflict between Darwinism and Christianity is seldom discussed and is usually thought of as lying in the past. Most of the difficulties which were so heatedly debated in the early days of Darwinism have been resolved but, as David Lack here argues, the conflict is still unsolved as the moral and ethical attributes which are a valid part of man's nature remain inexplicable in terms of Darwinian evolution, for natural selection is amoral so cannot have produced man's moral and spiritual characteristics. The earlier history and progressive vindication of natural selection as the main agent of evolutionary change are lucidly summarised. The moral and philosophical implications in regard to man are then considered and what appear to be irreconcilable difficulties are plainly stated. For impartiality of presentation and clarity of exposition it would be difficult to imagine a better short account of the problem.

W.A.S.

The Great Chain of Life, by Joseph Wood Krutch. Pp. 228 with decorative illustrations by Paul Landacre. Eyre & Spottiswood, 1957. 21/-.

This work was first published in 1956, in the United States, and its appearance in an English edition is welcome. The author is a distinguished naturalist and his thesis in the series of essays which comprises the book is to restore something of the awe and wonder which he thinks has been untimely removed from our conception of the natural world by the over mechanistic interpretations which have stemmed haphazardly from the Darwinian concept. That all things are explicable, he would argue, is not to say that all things have been, or will be, explained and there are many complexities which are better resolved in round human terms such as 'love' and 'joy'. He will persist in regarding insect metamorphosis as miraculous, despite any detailed physiological account which glibly eludes the why and the wherefore, and he maintains that although bird-song may indeed be functional in declaring a territory it may yet have a joyful exuberance which extends beyond mere function.

The critics who attack the Darwinian hypothesis as though it were a dogma could do a lot of useful work towards advancing our understanding of so much of the mystery of life as is permitted to our limited comprehension but it is as well that such arguments as this should be put before us from time to time in order to keep us humble that we may not be humiliated. We are in need of reverence.

A.H.

Wild Encounters, by Eileen A. Soper. Illustrated by the author. Pp. 220. Routledge & Kegan Paul, 1957. 25/-.

First and foremost let it be said that Miss Soper is a competent and sensitive draughtsman and that the sketches which adorn almost every page of the book are beautiful, animated and stated with a truth which can stem only from a combination of sustained and sympathetic observation and a remarkable mastery of the pencil. Her romping animals in particular are drawn with an uncanny feeling for bone and articulation and with a skill in imparting motion which I have not seen equalled.

The text is divided into numerous short chapters in which the author retails her experience in combining garden and sanctuary, from the choice of shrubs to the making of nesting boxes and includes accounts of the residents and guests in her domain. Miss Soper's sympathies extend perhaps particularly to the mammals, large and small, and an entire section of the book is devoted to badgers, especially to a colony established in an outdoor piggery. Her observations, like her drawings, are percipient and unencumbered and though the book will not add much that is new to natural history, it will grace it uncommonly well.

A.H.

Tales of a Wildfowler, by W. A. Cadman. Illustrated in black and white by Peter Scott. Pp. 192. Collins, 1957. 21/-.

Mr. Cadman's account is that of a wildfowler who knows his quarry. He is an accomplished bird-watcher of long standing who has succumbed to the undeniable attractions of pursuing ducks and geese with field-glass and gun, carrying the hunting

instinct which underlies so much of our natural history to its lethal and mensal conclusion.

There are times when the naturalist in him is uppermost, as in his investigation of the differential food supply of the Greenland White-front in this country, but for the most part he writes of stalks and shots and their concomitant pleasures and excitements, evocatively and with a remarkable freedom from inhibition. He confesses freely and frequently to that most insidious of all temptations, the long shot, which, especially when big shot are used, is more likely to send a bird away to die from an internal haemorrhage than to kill it humanely and where it can be recovered. These accounts are not likely to reconcile sportsmen and bird-lovers, though Mr. Cadman is himself a bird-lover who takes his cripples home and enjoys their companionship. The conflict stems from human nature and is comprehensible but I do not like those long shots.

A.H.

I Watch and Listen, by Nancy Price. Pp. 160 with 20 plates. Bodley Head, 1957. 15/-.

Miss Price is a bird-lover who, without doubt, enjoys a great deal of pleasure from her acquaintances. Had she been content to retail her experiences, we might well have shared in her pleasure for she writes with enthusiasm. Unfortunately she chooses to be didactic and the fabric of her discourse is shot through with holes, some of them, I fear, quite large ones. Thus, of Goldcrests, 'the smallest and perhaps loveliest of little birds . . . I have rarely seen them settle, except when eating the seeds of the thistles that I keep in a patch especially for their menu'. Similar mistakes and misapprehensions abound and inevitably recall the threadbare aphorism concerning a little learning.

The book is recommended by the Book Society, not by me.

A.H.

Three Frontiers, by Alice Day Pratt. Pp. 132. Mark Paterson & Co. for Vantage Press, New York, 1957. 22/-.

Miss Pratt has no inhibitions about disclosing her age. She was born in 1872 and she stems directly from a New England family who joined a westward trek from the Massachusetts Bay colony in 1636 in a search for 'perfect freedom'. It is manifest from this sketchy autobiography that Miss Pratt has carried on the search although at the end she concedes an inevitable defeat, tempered by the realisation that joy lies in the striving; attainment is immaterial. All of which has been disclosed before.

Born of a father who was wounded in the Civil War and who settled with his family in the undeveloped Minnesota prairies, the author was one of those sensitive pioneer children who grew up in close sympathy with their environment, upon whom the trammels of the 'study and prosecution of education' chafed so much that after 15 years of school-teaching she abandoned her profession and accepted the hardships and uncertainties of homesteading in direct preference. Taking a section in a sequestered part of Oregon, she began with a tent, an incubator and great courage. The story of her struggle to develop the homestead, her happy associations with her livestock and variable ones with her neighbours, the conflict between the urge to conserve and the need to kill, is recounted with a restrained good humour and with grace. That it culminated after 18 years in a foreclosed mortgage during the great American slump, in abandonment and debt, is retailed without a plaint, even though with regret, for by that time she had found the freedom of acceptance which makes the heart invulnerable.

E.H.

Harimau, by Rudolf Voorhoeve. Pp. 160. Elek Books, 1957. 12/6.

It would seem that the repatriation of Europeans from the resurgent East is likely to result in a spate of reminiscences.

Harrimau was a Sumatran tiger and Mnhr. Voorhoeve a hunter who tells his story as a detached narrative with a prefaced assertion that his experience of the beast was at first-hand. It is a well-told tale of a tiger whose normal territory impinged upon a native village, whose food comprised not only the beasts of the jungle but also domestic cattle, and eventually, through mischance, included a woman from the village. Pursued with guns and waylaid by traps, the tiger comes to its death unwitnessed and, perhaps because of its obstinate refusal to become a hearthrug, there is something of apotheosis in the handling of the entire story.

The impact of the tigers upon the villagers and upon the brown and white hunters is sympathetically handled, the conflict between pagan fear and self-interest which besets the headman, the relentless pursuits by the brown hunter, himself made childless by a tiger, and the considerations of self-respect which impel the author are all sharply defined; but the motivation of the tiger sidles uneasily between mechanistic and anthropomorphic interpretations so that it becomes no tiger at all, only a projected image, and a fuzzy one at that.

E.H.

Reading the Landscape, by May Theilgaard Watts. Pp. x + 230 with numerous drawings in the text. New York and London: The Macmillan Company. 33/- net.

This popular introduction to ecology takes its examples from the Western United States, each chapter being a personal narrative of an imaginary excursion to a locality of distinctive ecological type. The anecdotal style cloaks a very genuine and loving scholarship and the bibliography includes, amongst more local references, a carefully selected and sound guide to the foundation literature of plant ecology available from classical American and British sources. If the style and the plethora of thumb-nail sketches do not repel, the British reader (for whom a glossary of American colloquial plant names and a sketch map would have been helpful) can make many rewarding comparisons with similar habitats at home. The frequency with which the same species or another of the same genus fills an identical ecological niche has of course far reaching implications, but he will also be impressed by the degree to which in a 'new country' continuity is available between the data of natural ecological change and the recorded details of the human interference that has converted virgin country into wheatland, farm or township. The author indeed does not hesitate to extend her story of natural communities into the local history and changing fashions of North American human societies and she would perhaps admit that at no other time and place could a wide reading public be anticipated for a book written in this particular way.

A.D.G.

Welsh Flowering Plants, by H. A. Hyde and A. E. Wade. Second edition. Pp. 209 with 4 plates and 7 text figures. National Museum of Wales, Cardiff, 1957. No price stated.

The first edition of this useful compendium of information about the flowering plants of Wales and their distribution appeared 23 years ago. The present edition has been revised throughout and in great part rewritten by Mr. Wade. The introductory sections dealing with plant distribution in Wales and its constituent counties has been rearranged and the information given in the annotated catalogue of species which makes up the major part of the book has been completely overhauled both as to recorded county occurrences, representation in the National Herbarium at Cardiff and nomenclature. The entry for *Callitriche verna* refers to some other species as the true plant has yet to be found in Britain, and *Saxifraga caespitosa* is not extinct in Snowdonia. Griffith's specimens of *Orobancha minor* cited for Llandona in Anglesey should be re-examined as the station is quoted by Griffith for *O. rapum-genistae* which the present writer saw growing there in abundance amongst furze bushes during the past summer.

W.A.S.

A Supplement to the Pocket Guide to Wild Flowers, by David McClintock. Pp. ix + 89. Privately printed and obtainable from Miss C. Rob, Catton Hall, Thirsk, Yorks. 6/- post free.

The Pocket Guide was published in 1956 and its popularity and excellence is reflected in the sale of over 24,000 copies. The present supplement includes useful material which had to be excluded from the main work owing to lack of space. Brief descriptions are now given of a further 450 species, bringing the total to 2,250, of which over 200 are not in the *Flora of the British Isles*. This is because many of the additional species are aliens or garden escapes, and their inclusion in a British Flora is largely a matter of personal preference. Thus the list ranges from familiar garden escapes such as Aubretia, Honesty and Potato to such rarities as *Sedum dendroideum* ('in a quarry in E. Jersey') or *Borago laxifolia* ('naturalised on Jethou'). Other items in the *Supplement* are a list of 300 hybrids, lists of plants grouped by communities, further general keys and a bibliography of County Floras and check lists.

The more enthusiastic amateur botanists who have the *Pocket Guide* will undoubtedly wish to have this useful supplement in addition.

B.A.K.

Collins Guide to Border Plants: Hardy Herbaceous Perennials, by **Frances Perry**. Pp. 288 with 40 colour plates and 16 in black and white. Collins, 1957. 25/-.

Over 2,000 species and varieties of herbaceous border plants capable of being grown out of doors in this country are included in this useful book. The genera and species are arranged alphabetically with information as to generic habit, horticultural value, soil preferences and propagation; and brief notes covering specific characteristics, geographical origin, time of flowering, height and space requirements. The introductory chapters deal with the planning, preparing and planting of borders, pests and diseases, and propagation methods. There are also many useful lists of plants suitable for special places such as shady and damp places, town gardens, etc., or for special purposes such as cutting, fragrance, early-, mid-, or late-season flowering, etc. The inevitable terseness of the text is relieved by the colour plates which are notable for their fidelity of colour rendering. These and the monochrome plates, together illustrating over 250 species, are a fine ornament to a thoroughly informative and competent text.

W.A.S.

The Animal World of the Sea translated and adapted from J. Forest's *Beautés du fond des Mers*, by **H. Gwynne Vevers**, Curator of the Aquarium, Zoological Society of London. Pp. 102 with 96 plates, 20 in colour. Rathbone Books. 25/-.

The Animal World of the Sea is a compilation of black and white or coloured photographs of marine organisms. There is a rough grouping into fish, echinoderms, coelenterates, crustacea, molluscs and sponges, but the photographs have been chosen purely for their aesthetic appeal, for their beauty of form, texture and colouration and not for their zoological significance. Even so, a few are of considerable zoological interest, notably the photographs of living *Ceramaster placenta* and *Madrepora oculata* or those of metamorphosing echinoderm larvae. All the plates are of high quality and very great beauty; the chief photographers being Scaioni and D. P. Wilson (plate 69b is ascribed to both). Short notes, giving rather fragmentary information about the groups of animals photographed are interspersed among the plates. Most of the plates are numbered and have an explanatory caption, but many have neither, nor is the reader's attention drawn to the list of missing captions on one of the final pages. Perhaps this is not so important since the book is designed for the enjoyment of pictures rather than for the acquisition of information.

M.B.

Exotic Plants of the World: translated and adapted from Marcel Belviane, *Beautés de la Flore Exotique*, by **A. J. Huxley**. Pp. 93 with 93 plates, 23 in colour. Rathbone Books. 25/-.

This handsome botanical picture-book of striking coloured and black and white photographs of plants would make an excellent school-leaving prize for a budding botanist and, indeed, a charming gift to almost anyone, but its wider purposes are not so clear. As might be expected its subjects are mainly drawn from certain familiar groups of plants with large and colourful flowers, such as orchids and cacti, and have no particular scientific interest, but these are more than made up for by the inclusion, among the rest, of a few quite remarkable photographs of great botanical interest. These include one of the Doum palm showing its extraordinary dichotomous branching; and another of that strange and little-known succulent from Madagascar, *Didierea*. There is a brief accompanying letterpress which it would no doubt be unfair to take too seriously.

R.G.

Cinquefoil, by **Mrs. C. F. Leyel**. Pp. 368 with 21 monochrome plates. Faber and Faber. 35/-.

Mrs. Leyel's treatment of herbs is, like her five previous and similar works, highly romantic. Whilst we may still be fascinated by the naïve remarks of a Gerard, Mrs. Leyel's appear insincere and artificial. One wonders what purpose is served by such a work as this with its trivial and unending scraps of poetry and its maze of indexes in numerous languages. What 'original' text there is bristles with loose statements and inaccuracies. For example, in consecutive paragraphs on p. 174 mezereon is stated to flower from May to June and in February; for each plant the

'Natural Order' is given, but the carrot (*Daucus varota* in the index) is elevated (p. 36) to a 'Botanical Order'.

The choice of original drawings by M. E. Eldridge is curious for they are either of such well-known English plants as the common daisy or of abstruse foreign species as narrow-leaved *Echinacea*. Five of the plates are well-executed reproductions of copper engravings by Crispin de Pas but even these cannot compensate for the high price of the book.

G.A.N.

Geology of the Country around Sheffield. *Mem. Geol. Survey of Great Britain*, by R. A. Eden, I. P. Stevenson and W. Edwards. Pp. 238. H.M. Stationery Office, 1957. 27/6.

This memoir completes the description of the Yorkshire Coalfield, subsequent on the resurvey of the area. The account of the Coal Measures which occupies more than half the memoir follows the lines adopted in areas to the north but is noteworthy for the first use in a memoir of a new and more satisfactory method of separating the Lower, Middle and Upper Coal Measures, the criteria of dating being the Clay Cross Marine Band and the Top Marine Band respectively. Thirty instructive text figures are included but the draughtsmanship compares badly with that in previous local memoirs. Naturalists will read with interest the chapter on Pleistocene and Recent Deposits which include the cave-earths of Cresswell Crag. It is a pity that for such a high-priced memoir the paper should be of such poor quality that it is almost possible to read through it.

H.C.V.

Photograms of the Year, 1958: The Annual Review of the World's Photographic Art. Published for *Amateur Photographer* by Iliffe & Sons, Ltd. Pp. 136, including 104 plates, 8 in full colour. $10\frac{3}{4} \times 8\frac{1}{2}$ ". Price 18/6 net (postage 1/9).

Photography can be used for many different purposes. For some, mechanical perfection is the goal. But the art of pictorial photography demands more than technical mastery. Like any other medium used for individual expression it is dependent on emotion, and the success of a picture depends upon its capacity to arouse a reciprocal emotion when viewed by an observer. *Photograms* records current trends in the art of pictorial photography and is notable for the high quality of its reproductions. The best work from 25 nations is included in this year's issue which amply demonstrates the vitality of approach of the skilled photographer to a wide variety of subjects. R. H. Mason provides the plate-by-plate commentary and an article on Pictorial Photography and the Future. There are also articles by A. L. M. Sowerby on the progress of photography in many countries, and by Mervyn Levy on Honesty and Distortion in Creative Photography.

The Scallop: Studies of a shell and its influence on human kind. Edited by Ian Cox. Pp. 135 with 98 coloured illustrations. Published by Shell Transport & Trading Co., Ltd., No. 1 Kingsway, London, W.C.2. 1957. 14/3 (including postage).

This beautifully produced book was issued to commemorate the diamond jubilee of the Shell Company and both the matter and the manner of its production fit the occasion. In it, eight authors who are all distinguished authorities in their respective spheres, discourse upon the rôle of the scallop in philology, zoology, archaeology, early Christian and ancient South American symbolism, painting, heraldry and gastronomy. The illustrations accompanying each article are carefully selected and exquisitely reproduced and the printing and binding are a notable example of the art of fine book making.

The B.B.C. Naturalist, edited by Desmond Hawkins. Pp. 93, profusely illustrated. Rathbone Books, 1957. 8/6 net.

As Desmond Hawkins rightly says in his introduction to this book, the great limitation of sound and television broadcasts is its ephemeral nature. Those who enjoy broadcasts in the naturalist programmes will therefore be glad to know of this publication which puts on more permanent record many of the items which have formed the theme of past broadcasts. The articles by 22 contributors whose names are familiar to naturalists are abundantly illustrated by photographs many of which are the work of the best known nature photographers. An odd feature of the book is that the word naturalist in the title is used as a synonym for zoologist. Botany does not qualify for inclusion.

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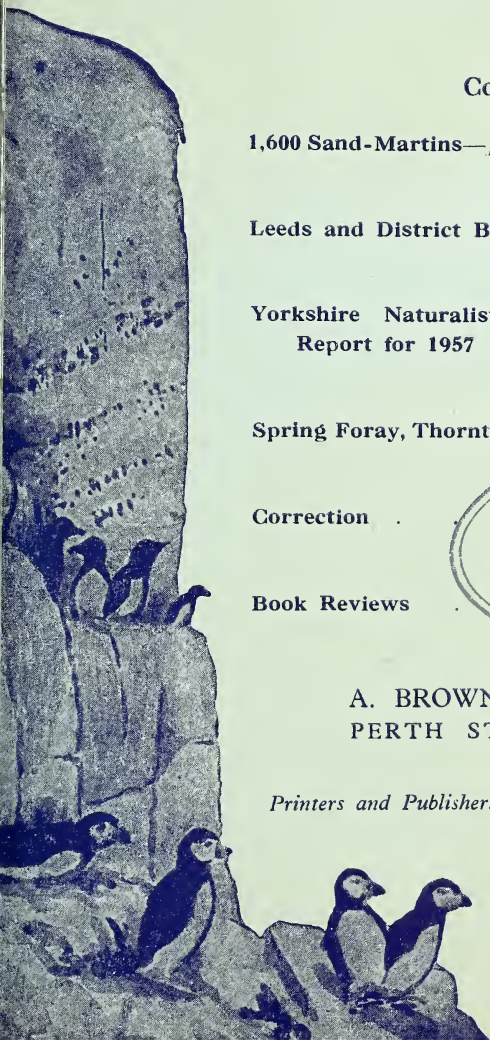
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1,600 SAND-MARTINS

J. A. S. BORRETT AND J. R. MATHER

In July, 1955, it was decided to concentrate on ringing Sand-martins. The method of catching them we employed, was to fix a polythene bag on to the end of a cardboard tube with a rubber band and to insert the tube into the nesting burrow. We used bags about ten inches by six inches and tubes seven inches long, of a diameter suitable for insertion up to two inches into the burrow.

In the remaining few weeks of the 1955 season over three hundred birds were caught and ringed. In 1956, July alone produced over one thousand and the complete season one thousand three hundred and one. In order to obtain the best results, the tubes should be inserted either when the birds have gone in to roost at dusk, or before they leave their holes at dawn. The morning session was preferred as the birds come out more readily and light conditions are obviously better. For an evening session a strong torch is essential in order to assist ringing in the failing light.

The birds usually start to return to their holes about half an hour before dark and when all are settled in, bagging should start, care being taken not to make too much noise as the birds are quick to leave at the slightest disturbance. All the holes must be covered as quickly as possible as the rustling of birds in the early bags will disturb those in holes not yet covered. Speed and silence are therefore the key to success. For a successful morning session a good knowledge of the colony and surrounding district is essential as the operation must commence whilst it is still dark. The bags must be inserted about half an hour before dawn. Slight noise cannot be avoided and a few birds will be caught in the dark. These can be stored for the time being. It is impossible to ring the birds as they come out as it is a full-time job dealing with probably fifty bags or more, each containing up to three or more birds. A storage box is therefore a necessity—well ventilated with ample floor space. Height is not necessary as the birds squat side by side on the floor. When the main rush appears to have emerged, the procedure should be to remove the tubes and withdraw to a reasonable distance from the colony. The birds can then be ringed and released in sight of the colony, but sufficiently far from it for them to return without being worried by the presence of the ringers. Good timing is essential and one must avoid the temptation to start too early in the evening, or similarly too late in the morning. Birds will still be on the wing well after 10 p.m. on a summer evening and will come out at the slightest disturbance on a morning session if it has started to get light. Much depends too on the weather.

Observation beforehand will show when a colony is 'ripe' for bagging, i.e. when the maximum number of juveniles are still roosting in their holes. They usually continue to roost in the colony for about seven days after leaving the nest. The peak period of the whole season is the first half of July in any normal year.

The equipment tends to be rather bulky, sacks full of tubes, keeping boxes, etc., but the method has much to recommend it. Every hole that can be reached can be covered and one can keep a check on the number of birds each hole produces. Fourteen have been taken from one and seven or eight from many. The birds cannot injure themselves and cannot escape. Even when dealing with a very large number of bags and birds one can work steadily on without fear of any mishap. The best morning session produced one hundred and fifty-three birds and an evening one, one hundred and sixteen. Over the season an average of three birds per hole is good as it has been obvious in many cases that all the birds do not come out.

There is no evidence that the disturbance is such as to cause any desertions. Birds have been photographed feeding their young within twenty-four hours of being ringed, and careful study of colonies after ringing sessions has never shown any change in the pattern. Young continue to be fed in their holes and the general activity seems to be quite normal. It is of course undesirable to overdo it. This would undoubtedly cause birds to desert and has the additional disadvantage that each visit produces fewer unringed birds. They seem to learn the form—the more often a colony is worked the fewer birds will come out. It should also be remembered that not all nests will be at the same stage, even during the first brood period, and some of the birds caught will still be incubating when others have juveniles on the wing.

In 1955, when the operation was only carried out on a limited scale and was commenced rather late in the season, no interchange of birds between colonies was noted. One first brood juvenile was still in its colony when second brood juveniles

were on the wing. This is unusual! One juvenile ringed in August was found dead in the middle of France a month later. One juvenile House-martin and a Tree Sparrow were caught in Sand-martin holes, the House-martin going in to roost with the Sand-martins one evening.

In 1956, about 10 per cent. of the birds ringed in 1955 were re-trapped. They had mostly been ringed as adults. Some were re-trapped in colonies other than those in which they were ringed although the majority had returned to their original sites. There was no evidence of birds moving very far from their home colonies, but this may be due to lack of coverage rather than lack of movement. Five birds moved to a different colony to rear their second brood. It is, of course, impossible to say whether this is normal behaviour or due in part to the disturbance of ringing, but the majority stay put.

Juveniles also move about—two were re-trapped twenty-four hours after being ringed, at a colony four to five miles away from the original, and many others moved shorter distances, sometimes only between separate colonies in the same quarry. Visual observation tended to suggest that river bank colonies were used as 'dormitories' by moving juveniles but trapping figures did not really support this. More information is required on this point. It is clear that juveniles do roost socially in nesting holes other than those in which they were reared, but only to a limited extent. There was no evidence, for example in a colony above which one thousand juveniles congregated on telegraph wires every evening, that any of them were roosting in that colony.

No evidence was obtained that second broods were raised in the first brood holes, nor that holes of a previous year were used. On the whole, the tendency was for a new colony to be dug near the one of the previous year. In some cases the new colony was dug on the opposite site of the gravel pit to the one of the previous year for no apparent reason. It would appear that the tendency is for birds to return to the same area, within a couple of miles or so. The new colony is usually established at the nearest suitable site to the old one. Within this relatively limited area, many of the birds seem to move from colony to colony, both from year to year and from brood to brood.

It has not proved the rule for all the Sand-martins in the area under observation to be double brooded. Second broods, apart from replacements, are probably only raised by those birds which have managed to get the first brood off early. In 1956 the first juvenile was caught on 16th June. One or two were caught during the subsequent week but the main body was not on the wing until the last day or so of the month. Probably only the parents of those very early juveniles raised second broods. First brood juveniles begin to flock towards the end of July and from then until the middle of August there is little except adults to be caught in the colonies. By September the adults have mostly left their breeding sites and the juveniles go soon after.

In 1955, the ringing of the species only really got started after the first brood juveniles had gone. It is not possible, therefore, to compare figures for the two broods that year. In 1956, the season started well but came to a gloomy end. Owing to the Suez crisis J.R.M. was re-called to the Army. After that, the weather ruined most of the colonies; the river bank ones were virtually completely flooded out and deserted, and in most cases the others were destroyed by soil subsidence caused by the heavy rainfall. This occurred before the second broods had fledged.

With its many rivers and gravel pits, Yorkshire is host every year to a greater number of Sand-martins than most parts of the country. They are easy and rewarding birds to trap and there is always the chance of some other species being caught. To ring them in large numbers every year would undoubtedly produce very interesting results.

It is hoped these notes will add a little to our knowledge of the Sand-martin and will be of use to any who are interested in taking up the study in the future.

LEEDS AND DISTRICT BIRD WATCHERS' CLUB

SECRETARIES of interested Societies and others may like to know that copies of the Club's 5th Annual Report for 1956 are available, price 9d. post free, on application to the Secretary, Roger V. Jackson, City Museum, Park Row, Leeds 1. A few back numbers of previous Reports are also available.

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Report for 1957

An open, mild winter, with little snow or frost and no reservoirs frozen; a cold drought throughout the spring months, and a good season for ground-nesting birds except where fires occurred; a wet summer with only very short fine intervals, continued into autumn when rain fell almost continuously in some districts from September 20th to 24th, with winds mainly from east; and mild later until November 30th when temperatures fell and severe frost followed for three days: such broadly was the weather of 1957.

THE SPURN BIRD OBSERVATORY

(G. H. Ainsworth and R. Chislett)

At Warren Cottage 144 people stayed for periods between two days and four weeks; Canadian and French ornithologists were included. Parties from natural history societies and from schools and colleges came for odd days.

Almost every week-end was covered throughout the year. Short, mid-week periods were vacant in early April, early June and early July, and the Hon. Secretary found difficulty in finding cover for a mid-week period in early October. Those willing to reserve a full week or more of their time and to arrange the bookings well in advance, should not be inconvenienced by too many week-enders, who should not come without prior agreement with the Hon. Secretary, to whom a stamped and addressed envelope is a convenience. People who have remained after their booked period has ended have also sometimes caused discomfort for the next party, which does no good to the observatory.

Many people have given of their time to help with practical matters, thus assisting the nightly charge of 3/- paid by us all to cover our expenses: for rings, rent, coal, electricity, paraffin, repairs to cottage and traps, renewals of equipment, postages and other matters. We also thank the anonymous donors whose gifts are found in the box, acknowledgements perhaps of benefits accrued from the work of others.

Birds ringed total 2,782 of 63 species. Every year has distinctive features. In 1957, ringings were down considerably of Blackbird, Whitethroat, Willow-Warbler, Meadow-Pipit and Snow-Bunting; but increases in numbers ringed of Dunlin, titmice, Song-Thrush, Redstart, Dunnock, Starling, Linnet, Chaffinch and House-Sparrow produced a total increase of *c.* 500. Titmice ringed of three species increased by *c.* 200, and have never before occurred in such numbers in all our years at Spurn (for details see Table and 'Classified List'). The decrease in warblers ringed connotes that fewer occurred, and in Snow-Buntings that bait failed to attract many in December.

All the traps have had their good periods. A few people have brought mist-nets in which a few birds have been caught. Mr. R. Spencer brought a mist-net in late August and caught some Dunlins, and showed its use and its dangers to G.H.A. and R.C. The danger is that birds can get harmfully entangled very quickly indeed and, no matter what happens elsewhere, it must be understood that at Spurn mist-nets are not to be left unwatched from near enough to enable birds to be extracted in a minute or less. Extraction is helped if the side into which a bird has flown is noted.

1958 April-June

	Total to 31/12/56	Ringed in 1957	Total 31/12/57		Total to 31/12/56	Ringed in 1957	Total 31/12/57
Storm Petrel	1		1	<i>Brought forward</i>	1755	509	2264
Fulmar	1		1	Redwing	145	26	171
Mallard	1		1	Ring-Ousel	11	2	13
Scaup	1		1	Blackbird	2582	234	2816
Long-tailed Duck	1		1	Wheatear	118	15	133
Common Scoter	1		1	Stonechat	23	5	28
Sheld-Duck	2		2	Whinchat	159	9	168
Sparrow-Hawk	18		18	Redstart	447	92	539
Merlin	2		2	Black Redstart	38		38
Kestrel	16	1	17	Nightingale	6		6
Red-legged Partridge	28		28	Bluethroat	6		6
Partridge	6		6	Robin	1077	47	1124
Pheasant	2		2	Grasshopper-Warbler	2		2
Corncrake	1		1	Reed-Warbler	10		10
Water-Rail	3	1	4	Sedge-Warbler	149	7	156
Moorhen	11	1	12	Icterine Warbler	3		3
Oystercatcher	1	3	4	Blackcap	53	10	63
Lapwing	3		3	Barred Warbler	10	1	11
Ringed Plover	83	18	101	Garden-Warbler	133	21	154
Turnstone	1		1	Whitethroat	1116	81	1197
Common Snipe	2		2	Lesser Whitethroat	56	5	61
Jack Snipe	1		1	Willow-Warbler	1254	82	1336
Woodcock	4	2	6	Greenish Warbler	1		1
Green Sandpiper	1		1	Chiffchaff	69	7	76
Wood Sandpiper	1		1	Wood-Warbler	12	1	13
Redshank	8	4	12	Yellow-browed Warbler	4		4
Dunlin	10	54	64	Goldcrest	248	41	289
Common Gull	6		6	Spotted Flycatcher	115	2	117
Little Tern	60	17	77	Pied Flycatcher	502	15	517
Razorbill	2		2	Red-breasted Flycatcher	7		7
Little Auk	1		1	Hedge-Sparrow	472	78	550
Guillemot	7	2	9	Meadow-Pipit	746	56	802
Puffin	2		2	Tree-Pipit	11		11
Wood-Pigeon	1	1	2	Rock-Pipit	6		6
Turtle-Dove	2		2	Pied Wagtail	2		2
Cuckoo	96	5	101	White Wagtail	1		1
Little Owl	5		5	Yellow Wagtail	5	2	7
Long-eared Owl	5		5	Waxwing	1		1
Short-eared Owl	1		1	Great Grey Shrike	7		7
Swift	2	1	3	Woodchat Shrike	1		1
Hoopoe	1		1	Red-backed Shrike	5		5
Great-spotted Woodpecker	2	2	4	Starling	710	144	854
Wryneck	16		16	Greenfinch	1400	70	1470
Skylark	122	30	152	Goldfinch	25	2	27
Swallow	280	33	313	Siskin	3	1	4
Sand-Martin	34		34	Linnet	1987	162	2149
Carriion Crow	2		2	Redpoll, Lesser	9	1	10
Rook	4		4	Redpoll, Mealy	9		9
Jackdaw	9		9	Bullfinch	2		2
Magpie	14	4	18	Scarlet Grosbeak	1		1
Jay	1		1	Crossbill	4		4
Great-Tit	51	21	72	Chaffinch	1200	155	1355
Blue-Tit	91	125	216	Brambling	333	30	363
Coal-Tit	1	60	61	Yellowhammer	71	9	80
Willow-Tit	2		2	Corn-Bunting	14	3	17
Long-tailed Tit	3		3	Red-headed Bunting		1	1
Tree-Creeper	3		3	Ortolan Bunting	1		1
Wren	187	43	230	Reed-Bunting	477	40	517
Mistle-Thrush	3		3	Lapland Bunting		1	1
Fieldfare	36	6	42	Snow-Bunting	641	289	930
Song-Thrush	493	75	568	House-Sparrow	1739	521	2260
				Tree-Sparrow	25	5	30
<i>Carried forward</i>	1755	509	2264	<i>Total</i>	20019	2782	22801

Recoveries of considerable interest will be found detailed under the headings of Ringed Plover, Dunlin, Wryneck, Wheatear, Blackbird, Song-Thrush, Chaffinch, Robin, Meadow-Pipit and Snow-Bunting. We believe the Wryneck recovered north of 65° in Sweden was the first English passage migrant of its species to be recovered abroad.

BIRDS OF 1957 RINGED IN PREVIOUS YEARS

Re-trapped in 1957	Years when Ringed				
	1956	1955	1954	1953	1952
5 Skylark	4	—	1	—	—
5 Blackbird	4	1	—	—	—
1 Song-Thrush	—	1	—	—	—
7 Whitethroat	7	—	—	—	—
1 Lesser Whitethroat	1	—	—	—	—
1 Willow-Warbler	1	—	—	—	—
10 Hedge-Sparrow	8	2	—	—	—
1 Meadow-Pipit	—	1	—	—	—
2 Starling	2	—	—	—	—
9 Greenfinch	6	2	1	—	—
20 Linnet	15	4	—	1	—
1 Chaffinch	1	—	—	—	—
1 Yellow-Bunting	1	—	—	—	—
7 Reed-Bunting	7	—	—	—	—
4 Snow-Bunting (previous winter)	4	—	—	—	—
1 House-Sparrow	—	—	—	—	1
—	—	—	—	—	—
76	61	11	2	1	1
—	—	—	—	—	—

The reduced Little Terns, as usual nowadays, were unable to hatch a lot of their eggs. Those that had persisted with 2nd/3rd layings were favoured with wet week-ends in July-August. Of the 17 juveniles ringed, 12 had still not reached the flying stage in August. We must make an effort to give the colony a better chance in 1958.

September 20th to 26th was an interesting period in autumn, with quite a lot of rain and easterly winds, which will probably be quite different in 1958. In this period occurred the autumnal maxima of Wheatear, Whinchat, Redstart, Robin, Garden-Warbler, Blackcap, and Pied Flycatcher; and odd specimens of Bluethroat, Wryneck and Ortolan. Conditions also seemed to affect birds elsewhere than at Spurn, especially waders: see under 'Little Stint'.

The extraordinary passage of titmice began a week before September 20th and seemed to be suspended between the 20th and 26th. The peak at Spurn was not reached until October 19th, with *c.* 40 Great-Tits, *c.* 150 Blue-Tits, *c.* 50 Coal-Tits noted in the day. A line in the Spurn log for October 15th reads: 'At 3 p.m. 80+ Blue-Tits (78 in one pack) passed down the peninsula. A remarkable sight.' And see under Titmice (288-290) in the 'Classified List'.

It is important that authentic unusual occurrences should not be omitted from the permanent published record. I would draw special attention to No. 37, Little Bittern; No. 119, Crane; and to Nos. 175 and 176, Bonaparte's Sandpiper and Pectoral Sandpiper—in years when an American wader occurs there are usually two.

Bird-ringing, trapping adults and finding young at the right ages, occupies much time at Spurn and elsewhere. In the analysis under counties of qualified ringers, Yorkshire bulks largely. The results, such as are to be found hereafter, are yearly adding to our knowledge of the origins, winter quarters, migration routes of our Yorkshire breeding birds and passage migrants. Some of those who work individually and privately also co-operate in the working of large Heligoland-type traps.

THE HIGH ROYD TRAP (TREVOR KEELER)

Birds ringed, including nestlings, numbered 519. A Yellow Wagtail of 1954, the only one of that year, was recovered in Portugal, and several other items are cited hereafter. Re-traps include a Great-Tit and a Blue-Tit, each in its sixth year. The site of the trap at the Sewage Works has to be changed.

WHARFEDALE NATURALISTS' SOCIETY (W. F. FEARNLEY)

Birds ringed by members numbered 1,812. Re-traps include a Robin aged at least six years, and a Blackbird over seven years old. Four recoveries abroad are cited in the 'Classified List'.

HARROGATE NATURALISTS' SOCIETY
(J. R. MATHER AND A. F. G. WALKER)

Members ringed 4,567 birds of 73 species, including nestlings. Among them were 480 Swallows, 532 Sand-Martins, 354 Lapwings, 448 Blackbirds, and 262 Song-Thrushes. Useful recoveries are cited hereafter.

A new trap has been started at Rodley Sewage Works by the Leeds Birdwatchers' Club and there are others in operation.

May I thank my colleagues—E. W. Taylor, H. O. Bunce, A. J. Wallis, J. P. Utley, and G. H. Ainsworth—for their help, and also all who have contributed notes, without whose co-operation such a report could not have been produced. It was a source of pride to me that all notes came without anyone being reminded, albeit one or two batches were late!

The scope of the Report increases as newcomers join us: over 220 people have contributed. To all I would say: Build up a reputation for accuracy and integrity; make no claims for rarities or difficult species that you cannot substantiate by notes taken in the field; if your diagnosis could have been wrong—say so; and learn to view your own records with as critical an eye as the most experienced view their own and those of others.

CLASSIFIED LIST

(B.O.U. 1952 CHECK LIST ORDER; WITH 'HANDBOOK' NUMBERS BEHIND)

1. **Black-throated Diver** (378).—One occurred at Hornsea Mere, November 17th to December 8th, when another was found dead from oil-poisoning (G.R.B.).

2. **Great Northern Diver** (376). Seen in the Tees Estuary on January 1st and 19th (P.J.S.); and off Redcar on January 27th (D.R. & P.S.), when one also seen off South Gare (G.R.P.). A diver at Ogden Reservoir on August 2nd was considered to be *C. immer* (C. Williamson). A 'probable' flew S-E at Redcar on November 9th (D.R. & P.S.). Identified at Spurn on November 10th and 20th.

4. **Red-throated Diver** (379). Occurred as usual off the coast in winter, spring and autumn. In two hours on February 25th off Hornsea c. 160 passed north and a few south (B.A.). There were c. 40 divers off Spurn on February 16th. Late single birds were off Teesmouth on May 25th (P.J.S., D.G.B.); and off Spurn on the 26th, and on June 13th (J.K.F.). Most of the divers off Spurn were unidentifiable but red-throats predominate. One on August 17th was the first of autumn; and from September 7th divers were seen on most days to the year end. On December 7th at between 15.00 hours and 16.10 hours 57 flew north at Spurn; on the 8th, 59 flew north off Hornsea in one hour (M.K.T.). Hornsea Mere showed this species on many days in January to March, and a few in December. Inland occurrences were: an early one on September 28th on the Humber near Faxfleet (J.E.S.W.); one at Fairburn on November 17th (C.W., R.F.C.), December 14th (G. & E.G.), and 15th (R.F.D., G.C.); and one near Knaresborough (Lingerfield Gravel Pit), January 11th to 26th (N.E.A.).

5. **Great Crested Grebe** (370).—*Circa*. 50 pairs produced at least 50 young. The dry spring caused many waters to contract with disaster to some grebes. Not all breeding pairs were followed up to check production of young; but a number were known to fail. One of two birds attending young on Newmillerdam on June 23rd had a striped head and neck (E.G.). The average time of dives of a bird at Eccup on February 16th was 25 seconds (maximum 33 and minimum 17 seconds) (R.V.J.). Tends to be reported more frequently in the winter months, inland and off the coast, usually as single birds; but c. 100 were off Bridlington in late February, which flock broke up as better weather came (B.A.). On February 25th c. 12 were off Hornsea (B.A.). Hornsea Mere still showed five birds on December 27th. Fewer pairs (nine successfully) bred in the Fairburn area than in 1956, as could be expected.

6. **Red-necked Grebe** (371).—Occurred at Teesmouth on January 26th, yellow bill seen (D.G.B.) and on 27th (G.R.P.); and one there on April 22nd was in

breeding dress (A. Vittery). One occurred on November 17th (M.R.S., A.F.G.W.). A bird at Hornsea Mere on February 27th was in winter plumage (J.C.H.L.). A grebe at Swillington Ing on October 23rd was thought to be of this species (G.R.N.). On August 11th on the Humber high-tide at Spurn, a bird in breeding plumage gave good views of its yellow bill (A.A., C.W.).

7. **Slavonian Grebe** (373).—One was in the Tees estuary on January 5th (A. Vittery, P.J.S.).

8. **Black-necked Grebe** (374).—Two grebes at Newton Ing on January 16th were either of this or the preceding species (J.D.P.). One was at Gouthwaite on October 14th (D.S., A.F.G.W.).

9. **Little Grebe** (375).—Odd birds occurred on several waters in the winter months increasing in mid-March. One swam on the 'canal' at Spurn on March 24th and 26th, and no more were seen until October 2nd (one). In late summer, Little Grebes gather on selected waters—22 at Swillington Ing on June 29th (A.H.B.L.) and 74 on August 3rd (W.C.W.). The peak at Bottomboat of 93 on October 9th had been reached steadily, and soon fell rapidly to *c.* eight (W.C.W.): the peak would include birds that had probably bred or been reared at Fairburn, where 11 broods included 47 young on May 25th and more fully-grown young were seen later (C.W.).

12. **Leach's Petrel** (351).—In late September or early October one was picked up dead near Bishop Wilton and sent to and identified by 'The Gamekeeper and Countryside' (T. Robinson). At 8 a.m. on October 21st, Dr. I. G. Brown at Lightcliffe, near Halifax, saw from his window at a range of 30 yards a Leach's Petrel being attacked by four Rooks. The bird appeared double the size of a House-Martin (to which the white rump gave some resemblance), and made some extremely rapid turns in flight. The wind was Force 6 and the day stormy.

14. **Storm Petrel** (350).—One considered to be of this species flew north at Spurn on November 9th; seen at *c.* 500 yards range (J.C.).

16. **Manx Shearwater** (355).—Four moved south off Dimlington on July 14th (H.O.B.). Noted off Spurn on a number of days from August 4th, and on three days in September; and one on November 9th. Off Redcar and Teesmouth occurred: two on June 23rd, on six days in July, and on three days in August, with maximum of 18 seen on July 28th. Of 24 Shearwaters fishing off Redcar on August 26th, nine were certainly Manx (D.R. & P.S.).

20. **Great Shearwater** (360). }

21. **Sooty Shearwater** (363). } —Two large shearwaters seen at long range from Spurn on September 29th, and two on November 9th, could not be diagnosed with certainty.

26. **Fulmar** (368).—Nested where now expected on the Yorkshire cliffs. Seen at Spurn, and Teesmouth fairly frequently throughout much of the year. One was still on the cliffs at Flamborough on September 18th (A. J. Williams); and one was flying off the same cliffs on December 1st. There was 'much noise and display' at Flamborough on December 2nd, with groups of up to ten on the water, single birds and pairs at several sites; and 'visitors' flying up and down the cliffs (A. J. Williams H.O.B.).

One came in from sea to Castle Cliffs, Scarborough, on December 5th, circled for a few minutes, and flew out to sea again. Single birds flew along the cliffs on December 23rd and 27th (A. J. Wallis). On Redcar beach three newly-dead Fulmars on January 19th, and three more on November 16th, showed no signs of injury (D.R. & P.S.). One flew over Garforth, Leeds, on May 19th (J.C.).

27. **Gannet** (349).—Two young were reared at Bempton; only two pairs bred. Gannets occurred off Teesmouth and off Spurn in every month—Spurn maxima 606 on August 11th; and *c.* 200 on September 14th, birds passing south on both days. A juvenile was picked up alive near Swanland, Hull, about August 28th (B.S.P.). An immature Gannet flew down Humber at Cherry Cobb after fog had lifted on October 12th (R.J.R.).

28. **Cormorant** (346).—Status remains unaltered, with 21 as maximum for a day at Hornsea Mere on April 8th (R.W.D.). At Redcar, *c.* 35 on December 14th was a large number; the flock was flying south-east (D.R. & P.S.). There were a few occurrences inland, such as one at Winterset Reservoir on April 18th (D. King & A. G. Gough); and one that flew east over Fairburn on May 18th (R.F.D., E.G.). One of the 'southern' type fished close inshore at Redcar on March 10th (D.R. & P.S.), and one at Spurn on March 30th (R.F.D.).

29. Shag (348).—The position at Bampton was as in 1956. One nest could be seen in the open. Breeding pairs were estimated at *c.* 15 (H.O.B.). Two were on Redcar Rocks on February 10th (G.R.P.).

30. Heron (289).—Occupied nests recorded were: Gargrave, ten (H.J.W., W.F.F.); Scampston, 11 (A.J.W.); Hornsea Mere, 31 (R.W.D.); Gilling, *c.* six (R.M.G.); Sleningford, three, perhaps seven (R.C.); Whixley, seven (R.C.); Harewood, seven (H.J.W., W.F.F.); Bolton-by-Bowland, six (A.P.); Moreby Park, nine (E.W.T.), Healaugh, 21 (W.B., & A. M. Rayner); and Ryedale, four, and Fadmoor, three (E.W.T.). Some woods are being or likely to be felled. One flew in from sea to settle in a coastal field near Redcar on August 19th. Five flew south over Redcar on September 17th, single birds flew NW on July 1st and 24th, and one came off the sea at South Gare on October 20th (D.R. & P.S.).

37. Little Bittern (296).—One was shot over marshes at Marley S.F. on September 27th and inspected by D. F. Walker, R. F. Dickens, and A. W. A. Swaine who preserved it; an immature female. A small, Heron-like bird flew with rounded wings into a ditch near Hartoft Edge on October 22nd and Col. Goodhart is confident it was of this species (E.W.T.).

38. Bittern (297).—Bitterns were reported from several areas. One by the Upper Humber on June 8th was seen 'frozen in protective attitude'; one was at Hornsea Mere on August 24th (M.W.); one at Bottomboat on September 8th was mobbed by Rooks and Jackdaws (R.H.); one at Fairburn on October 12th was seen flying three times (G. & E.G.); and presumably was the bird seen by Dr. Pickup on October 17th and by C. Winn on the 19th. A Bittern was shot near Finningley in December (A.E.P.); and one flushed from *spartina* at Welwick saltings on December 29th (A. Credland).

42. Spoonbill (287).—Good views were had of a Spoonbill at Spurn on July 26th that flew from the Lagoon area towards the 'Crown and Anchor' (W.C.W.); and that rose at 10 yards range from a pool in the Chalk Bank area on July 29th (C.I.B., R. Brownsword). It was an adult bird with white tips to the primaries, as was one at Patrington Haven on July 29th (A.C., H.O.B.), doubtless the same bird.

45. Mallard (317).—This species still justifies its old name of 'common wild duck'. It has enemies. On May 13th at Bretton Park, a brood of ducklings crossing the lake were counted several times; always there was one fewer, and only one of the brood appeared to reach the island—pike abound (T.D.B.).

The mild 1956-57 winter resulted in numbers on waters used for day-time resting being reduced less drastically in the earliest months than usual. In April few but the local breeders remained. In the Washburn Valley, E.S.S. and C.G.B. are of opinion that numbers of Mallard wintering have fallen during the past few years. Numbers on other inland waters built up more slowly in the 1957 autumn, but at Leighton had reached *c.* 1,000 at the turn of the year. At Hornsea Mere estimates of *c.* 3,000 on January 1st, of *c.* 70 on April 4th, of *c.* 180 on July 31st, of *c.* 550 on September 1st, of *c.* 1,300 on October 2nd, and of *c.* 3,000 on November 9th, briefly summarise the year (G.R.B., R.W.D.). November 9th and 11th were days of passage by Mallard at Redcar (D.R. & P.S.). Plentiful at Spurn in late February to early March; and not again until November-December. The upper Humber appears to have had its usual large numbers.

Ringed as juvenile 1/7/57 at Redmires Dam, Sheffield; shot Whitley, Cheshire, 7/11/57 (D.R.W.).

Ringed as adult drake at the Camargue Biological Station, South France, 20/12/54; shot five miles up Humber from Kilnsea in late October to early November, 1957, by a man engaged on sea defences (J.K.F., Miss E. P. Leach).

46. Teal (311).—Numbers maintained both of breeding and wintering birds. *Circa* 700 were at Brotherton Ing on November 17th (R.F.C., R.H.). At Hornsea Mere *c.* 700 on February 10th; and *c.* 500 on December 1st and 29th were maxima (G.R.B.). The estimate recorded on April 7th for the Derwent Valley floods, and for the Broomfleet area of the Upper Humber on April 11th was *c.* 600 (S.M.), and for the former area was *c.* 860 on December 22nd (A.F.G.W.) and for the latter area on December 30th was *c.* 500 (S.M.). At Spurn *c.* 175 on September 7th, mostly consisted of birds passing south.

47. Garganey (322).—Two family parties were seen July 28th at Fairburn (C.W.). Occurred at Hornsea Mere, March 30th (R.W.D.) to May 11th (M.K.T., G.R.B.), maximum one male, three females on April 14th. One occurred off Tees-mouth on April 14th (B.J.C.). Present at Fairburn from March 24th to September

8th (J.D.P., R.H., C.W.); and at North Cowton Bottoms on May 26th (P.J.S.), and Wath Ings on June 23rd (J.B.H.); and a pair on the Derwent floods near Wheldrake from March 24th to May 5th (B.D.). One was at Spurn on November 30th.

49. Gadwall (318).—Noted at Hornsea Mere in every month—maxima ten on January 5th (M.K.T.) and five on September 29th (G.R.B.). Seen in the Bottomboat area in May and August to October, maximum six on August 18th (E.G.). At Swillington Ing where the species occurred in April and May, and in August to October, ten on August 28th (G.R.N.) was the maximum number seen. One was at Altofts on October 19th and six at Winterset Reservoir on December 1st (J.C.). Occurred at Fairburn on several dates (C.W., G.W.).

50. Wigeon (323).—At Spurn the wintering Wigeon declined in late January; but built up again to a maximum of *c.* 250 on March 3rd, then fell rapidly—eight were seen on April 29th. Five next occurred on September 1st and the autumnal maximum was not reached until December 29th (*c.* 230). One was at Wath Ings on September 7th (R.J.R.).

At Hornsea Mere the winter maximum was *c.* 400 on January 13th (R.W.D., G.R.B.), the last seven were seen on May 12th (R.W.D., M.K.T.), and three on June 12th (R.W.D.). Numbers built up in autumn from 16 on September 9th (M.K.T.) to the maximum of *c.* 740 on December 30th (G.R.B.). Very large numbers were off Hornsea on December 8th, *c.* 850 passed south in one hour, and several parties passed north, total numbers were impossible to estimate (M.K.T.). Ten flew in from N-NE south of Bridlington on August 19th (J.C.H.L.). Two were at Fairburn on June 7th (C.W.). The species were well spread over inland waters in the winter months with less than 50 recorded everywhere except at Gouthwaite, *c.* 190 October 28th (A.F.G.W.); Bottomboat *c.* 92 November 24th (R.H.); and Hornby Lakes *c.* 50 January 20th and December 15th (G.R.P.). The Derwent Valley floods had *c.* 2,000 on March 24th, and *c.* 1,000 on December 22nd (A.F.G.W.).

52. Pintail (325).—Occurred rather infrequently on a number of waters in the early and late months in small numbers, with March 31st as the latest date, when there were: one at Wath Ings (D.A.), nine at Teesmouth (J. Henderson, P.J.S.); and 17 on the Derwent floods near Wheldrake (B.D., K.D.). A.F.G.W. had seen *c.* 36 on the floods on March 24th, and saw 11 on September 29th. An early duck was at Fairburn on August 4th (A.H.B.L.).

The Humber Wildfowl Refuge Warden reported more in the upper Humber in 1957 than usual. Twenty were at Cherry Cobb on January 6th (A. Credland); and *c.* 25 at Patrington Haven on December 29th (A.C.).

53. Shoveler (326).—Nested by several waters and seen on others. Nowhere else were numbers present numerically approaching the *c.* 180 at Fairburn on August 5th (W.C.W.) and the 108 counted there on November 11th (R.F.C.). The Derwent Valley floods showed 64 on March 24th (A.F.G.W.).

54. Red-crested Pochard (327).—This species has occurred sufficiently frequently to have become the subject of an 'enquiry'. J. E. S. Walker was sketching ducks at Swillington Ing on June 27th when he noticed several drake and several duck Red-crested Pochards and took full descriptions. A.H.B.L. saw a duck there on June 29th; and there was one on July 17th (D.J.R.P.). At Fairburn, P. J. Stead and W. Austin saw a duck on July 21st; and one was seen on August 11th (R.F.C., W.C.W.); and on August 14th (D.J.R.P.). D. R. Wilson recorded three females at Redmires Dam, Sheffield, on November 10th. This species is kept on some ornamental waters but it is unlikely the above occurrences are all 'escapes'; and it may well be extending its range westward.

55. Scaup (331).—Has been rather more frequent than usual, with up to four at Fairburn on various dates up to the last for spring, a male on May 5th (R.H., B.A.); and a drake at Bretton on March 3rd and 10th (E.G.). In autumn, one at Gouthwaite on September 8th (V.S.C., I.M.), and one on September 10th; and four on the 17th at Stocks Reservoir (A.P.) were early. Scaup also occurred in autumn at Fairburn, Gouthwaite, Ardsley, and Glasshouses Dam and on the Nidd at Knaresborough (I.D., J.R.M.). A few appeared at Spurn on various dates with 21 on October 15th as by far the largest number. Off Hornsea were *c.* 20 on March 2nd (G.R.B.) and there were other East Riding records. At Redcar one occurred on August 18th; and 15 flew north-west at South Gare on September 29th (D.R. and P.S.).

56. Tufted Duck (330).—Proved to breed at several places including Stocks Reservoir (A.P.), Gouthwaite (A.F.G.W.), Bretton (J.C.S.E.), Sawley (R.C.) and

Fairburn. Occurred on most waters with maxima of *c.* 60 at Gouthwaite in August, *c.* 180 at Hornsea Mere on February 3rd (R.W.D.) and *c.* 400 on December 15th (G.R.B.), *c.* 200 at Welton Water on December 14th (B.S.P.); and in the Fairburn area *c.* 185 on March 23rd (R.F.D.), 186 on December 29th (R.H.), and *c.* 300 on December 23rd (E.C.S.).

57. Pochard (328).—Occurred on many waters, but D. Ashurst thought numbers in South Yorkshire were smaller than in colder winters. Bred by at least three waters. Noteworthy maxima were: *c.* 200 at Fairburn on February 20th (A.F.); 82 at Thrybergh Reservoir on March 3rd (J.B.H., G.F.K.); 110 at Swinsty Reservoir on December 22nd (O.M.P., H.J.W., W.F.F.). At Hornsea Mere were *c.* 300 on January 6th (R.W.D., M.K.T.); *c.* 600 on December 15th (G.R.B.). On October 19th, different counters at Hornsea Mere produced figures of *c.* 320 and *c.* 850, a difficult water to count accurately; where shaded inlets may be overlooked and where birds may fly to another part and perhaps be counted again, I prefer estimates to be on the conservative side.

58. White-eyed Pochard or Ferruginous Duck (329).—A female at Harewood on June 10th was thought probably to be an 'escape' (G.R.N., M.D.). Details taken at the time of a bird on a pond at Owlerton, Sheffield, were cited by R. Hawley (eye either yellowish or white, under-tail completely white, etc.). A duck at Fairburn on October 19th and 22nd was well described by C. Winn (head, neck, breast and sides of body dark chestnut, very white under-tail coverts, eye slightly less white, etc.); on the 20th B. Lavery induced it to fly and to show white wing-bars. It was considered to be a male (C.W.).

60. Goldeneye (332).—Seen on twenty-two enclosed waters, in all five vice-counties, on rivers, and on the sea; the waters include those most regularly visited by ornithologists; and more visits to others would doubtless have added to the list. Numbers were usually small, with maximum at Fairburn of 24 on March 31st (E.G.), and 25 at Gouthwaite on April 13th, excepting Hornsea Mere. Occurred at Fairburn as late as May 19th (R.H.) and June 2nd (W.C.W.); and at Blackmoorfoot, a male on May 25th; and on June 2nd (A. N. Sykes). A juvenile was claimed for Fairburn on July 25th (W.C.W., K.S., C.W.). Two were off Bridlington on June 12th (B.A.). The first of autumn appeared at Fly Flatts Reservoir on September 1st (C.R.S.). Numbers at Hornsea Mere averaged *c.* 43 on fifteen visits from January 1st to March 30th with maximum of *c.* 80 on February 3rd (R.W.D.). From October 27th to December 30th, Goldeneyes at Hornsea Mere averaged 62 with maximum of 110 on December 1st (G.R.B.). Twenty-six were at Fairburn on December 21st (C.W., B.H.).

61. Long-tailed Duck (334).—A male was picked up dead by Leighton Reservoir and reported to P. Young on January 25th. Two were on the Derwent floods on November 17th (B.D.); and there was a 'possible' at Eccup on the same day (G.R.N.). Single birds were with Scoters off South Gare on January 12th and off Redcar on March 9th, 10th and 16th (D.R. & P.S.); and a few were present in autumn when considerable numbers were on the Durham side of the Tees. The largest coastal party numbered 13 off Atwick on October 13th (M.K.T., R.W.D.), and nine were off Hornsea on November 10th (G.R.B.). Single birds occurred at Scarborough on November 6th, 10th and December 7th; and a pair in the harbour on December 10th (A.J.W.). One was at Spurn on October 25th and five on November 9th (J.C., C.W.).

62. Velvet Scoter (340).—Not noted at Spurn until July 29th (one); thereafter a few birds were seen on fourteen days to the year end. It is regrettable that no mention should appear in the log of the record figure of 40 appearing against this species in the 'roll-call' for December 7th. A few occurred at Teessmouth and Redcar in February and March, and in October to December—the first of autumn had appeared on August 8th (D.R. & P.S.). The species seldom appears inland; two were at Beaverdyke Reservoir on December 4th (G.R.N.); and two at Winterset Reservoir on December 22nd (M.N.R., A.G.G.), 24th (J.D.P., D. King), 26th and 28th (J.C.S.E.). Seven flew up the Humber, near Melton, on October 27th (B.S.P.); and single birds off Hornsea on November 9th and December 1st (G.R.B.).

64. Common Scoter (309).—Often appears inland especially in the late summer. Notable counts on the coast, where there are always some somewhere, included: *c.* 300 off Bridlington on February 26th (B.A.), *c.* 210 off Redcar on March 10th (D.R. & P.S.), *c.* 750 in five rafts off Hornsea on March 24th (R.W.D.), *c.* 400 off Redcar on July 4th, *c.* 239 in Bridlington Bay in three parties on August 2nd (G.R.N., M.D.), *c.* 700 off Teessmouth on August 5th (P.J.S., A.J.V.) and *c.* 500

in one flock in Bridlington Bay on August 19th (S.M.), *c.* 300 that flew across Tees Bay on November 9th (P.J.S.); and *c.* 450 off Redcar on November 16th (D.R. & P.S.). There were no large numbers recorded at Spurn until August 5th, after which up to *c.* 250 were seen daily for a week; and no further large flocks occurred until November 9th when *c.* 1,400 passed south (J.C.).

Inland, the spring passage occurrences were: two Gouthwaite, January 12th (M.R.S.), one Castle Howard Lake, April 14th (R. F. Wormald), three Winterset, April 16th (A.G.G.), one Fairburn, May 2nd (R.F.D.), and three Ardsley Reservoir, May 4th (R.F.C., R.H.). Probable cross-country flight was intercepted on July 31st when *c.* 130 flew south-west over Ossett (J.C.); and *c.* 200 flew westward past Whiteholme Reservoir (V.S.C., I.M.)—35 alighted, the rest flew on. Over Fairburn *c.* 14 flew west on August 19th (C.W., G.W.).

On July 14th five Common Scoters were at Birkdale Tarn (A.F.G.W., M.R.S.), and one on Lingerfield G.Pit (I.D.), and 26 were at Semerwater (G.R.N., M.D.). On September 28th *c.* 120 flew east near Ferriby (J.E.S.W.)—there were eight at Stocks Reservoir on September 22nd (J.K.F.), three at Gouthwaite on the 21st (A.F.G.W.), five at Blackmoorfoot on the 28th (B.A., R.Cr.), perhaps all connected with the same movement. November 9th was another time of Scoter activity (see for Teesmouth and Spurn); 14 were at Ogden Reservoir (Halifax) on the 10th (C.W.); one at Fly Flatts Reservoir was spotted on the 17th (C.R.S.). Other records were two at Eccup on October 1st (G.R.N.); and one at Fairburn on several dates in December.

67. Eider Duck (337).—More frequent off the coast than usual from Teesmouth southward. Recorded on thirteen days from January to April 13th when two off Spurn were the latest; and on fifteen days from November 9th. *Circa* 30 in Filey Bay in a northerly gale on November 10th was the largest number ever recorded for the Scarborough area (A.J.W.). Other parties included 15 off Bridlington on November 22nd (J.C.H.L.), 16 seen there on December 4th (R. Holmes, A. Vaughan) and 12 on the 14th (B.D.); and off Spurn 13 on November 16th (J.C.) and 15 on November 19th (G.R.E.).

69. Red-breasted Merganser (343).—A solitary drake Merganser on June 4th on a sheet of water in the north-west (K. G. Spencer and A. Welch); and a distant duck that appeared to have a crest and a long neck, with seven young on July 28th (J. K. Fenton) implied the possibility of breeding. Nine Mergansers, mostly immature, in a party on September 3rd (K.G.S., A.W., M. G. Hale, and others); and nine, all juvenile (or female) on September 8th (J.K.F.) confirmed the possibility.

A juvenile drake was on the sea near Bridlington on June 14th (B.A.). Two occurred at Fairburn on January 20th (C. Moody). Single birds were at Gouthwaite on January 21st (R.C., H.G.B.); Eccup on March 12th (G.R.N.); Bottomboat on November 24th (R.F.C., W.C.W.); Hemsworth, December 4th to 14th (D.K., M.N.R.); Winterset, December 22nd (M.N.R., A.G.G.) and 24th (J.D.P.); and at Hornsea Mere on March 2nd (F.E.C.), November 30th and December 27th (G.R.B.). Occurred very occasionally at Spurn and Teesmouth.

70. Goosander (342).—Status at Eccup, Hornsea Mere and Stocks Reservoir resembled that of 1956. Also occurred on many other waters more occasionally in small numbers.

71. Smew (344).—Occurred in January to March at Fairburn and Winterset regularly; and on occasion at Eccup (four, February 2nd); Gouthwaite, Harewood, Sawley, and Hoyle Mill Dam (Hemsworth).

73. Sheld-Duck (315).—A few occurred inland, mainly on waters in or adjacent to the valleys of Don, Calder and Aire in all months; and more often at Swillington Ing and Fairburn than elsewhere. At Swillington Ing on June 22nd were six downy young (W.C.W.), never seen with adults, which no doubt included the five part-grown young of July 21st, two of which were still there on August 18th (E.G.). Seventeen at Ingbirchworth Reservoir on November 9th (J.C.S.E.) was much the largest number seen inland; eight were on the Derwent Valley floods on February 17th and two on November 9th (B.D.).

By the upper Humber were *c.* 300 on January 8th (S.M.), *c.* 290 on April 6th (S.M.), *c.* 170 on August 21st and *c.* 350 on November 2nd (B.S.P.), with *c.* 140 on December 30th. At Patrington Haven the maximum was *c.* 140 on July 14th (A.C.). Almost always seen at Spurn with maxima *c.* 40 on March 30th, *c.* 60 on April 23rd, and *c.* 56 on July 26th—there was no proof of breeding there. *Circa* 70 entered the

Tees Estuary on January 1st to join the large numbers at high tide on the Durham side; and large numbers entered on November 30th (P.J.S., D.R.S.).

75. Grey Lag Goose (303).—An injured bird was caught near Dewsbury on February 10th (W.C.W.).

76. White-fronted Goose (304).—An immature bird was shot at Bretton Park January 6th (E.G., J.C.).

75/78. Grey Geese (303/307), **mainly Pink-footed**. On September 15th *c.* 150 were on Whitton Sands (S.M.); and 12 flew south across Tees Bay (P.J.S., A.B.). On the 16th, on the upper Humber, were *c.* 350, which by mid-October had become *c.* 6,000 (estimates of Warden of Humber Wildfowl Refuge). Wold flights continued until the year end. An evening flight of 'thousands' passed near Market Weighton on December 21st (E.B.B.). 'A farmer told me that heavy storms knocked a lot of grain out of the ear just before harvest so the gleanings would be good that year' (H.O.B.).

On October 22nd Mr. P. Scott's rocket-nets caught 250 Pink-footed Geese on the Wolds. The following were included:

One ringed as 'pull' in Iceland 1/8/51, recaptured Iceland 4/8/53, and re-caught in the Wolds 16/10/53.

One ringed as adult in Iceland 4/8/53; re-captured in Lancashire 11/10/53.

Thirteen others that were ringed in Iceland in the summer of 1953 and not seen until 22/10/57.

Fifteen birds that had previously been ringed in Britain, viz:

Ringed	Place	Ringed	Place
2/12/50 as 1st W. bird	Lincolnshire	28/10/55 as 1st W. bird	The Wash, Lincs.
12/10/51 "	Berwickshire	28/10/55 "	"
17/10/52 as adult	Kinross	28/10/55 "	"
11/10/53 "	Lancashire	29/10/55 as adult	"
21/10/53 "	Midlothian	29/10/55 "	"
20/10/54 "	North Lincs.	18/10/56 "	E. Riding.
26/10/54 "	Berwickshire	25/10/56 "	The Wash, Lincs.
25/10/55 "	East Riding		

Directions of flight in autumn, other than between the Humber and the Wolds, still vary. In late September and October directions were mainly east, south-east, or south; but not all. On November 2nd *c.* 200 flew north at Great Ayton (A. E. Felgate); on the 3rd, *c.* 200 at 8-15 a.m. and *c.* 500 at 9-15 a.m. flew S-E at Thornton Dale (R.M.G.). On November 23rd *c.* 500 in three skeins flew north over Ilton (P.Y.); and at Fairburn *c.* 250 came from north to turn east, and *c.* 150 from north turned west (G. & E.G.). Most skeins flew west in November. On December 19th *c.* 300 flew north over Ilton (P.Y.), and on the 24th several hundreds flew west over Knaresborough (N.E.A., G.R.W.).

Mr. Scott's ringings confirm my surmise in *Yorkshire Birds* that 'the winter quarters of the geese are inter-connected'.

All but one (a Grey-Lag) of the dozen records of single geese on inland waters on various dates referred to pink-feet. Such birds that have left their flocks are usually unwell, with lead as the most frequent cause.

80. Brent Goose (312/13).—Two at Spurn on March 5th, and two on November 17th were dark-breasted; and five on November 30th were probably so.

82. Canada Goose (314).—Bred in regular haunts; and at Burton Agnes and Castle Howard, Studley Royal Lake; and at Stocks Reservoir for the first time. One came in from sea at Spurn on September 12th and turned south (E.E.J., G.R.P.). Two were on Redcar beach on June 10th and July 2nd (D.R. & P.S.). One was at Lockwood Beck Reservoir from September 7th to year end (A.J.V., J. Henderson); and nearby *c.* 40 flew on July 27th—it was reported a wildfowling club had been rearing and releasing Canadas in the Darlington area (P.J.S.). One turned up at High Royd S.F. on April 24th (J. M. Ridsdale). At Ripley 33 adults and young had blue numbered rings put on left legs on June 27th; and two of 1956 were recaptured; one ringed 27/6/57 was dead at Harewood on December 23rd (A.F.G.W.). Maxima recorded were 189 at Ripley on August 25th; and 209 on the Ure at Masham on December 21st (E.E.J.).

Egyptian Goose (*Alopochen aegyptiacus*).—There was an adult at Bretton Park Lake on March 23rd. It was not ringed and was probably an 'escape' (J.C.S.E.).

84. Mute Swan (302).—Secluded and industrial waters seem to be used impartially. At Fairburn, 107 on July 18th and 23rd was the maximum recorded

(C.W.); at Hornsea Mere were 84 on December 22nd (G.R.B.); and at Welton Water 35 on December 14th (B.S.P.). Up to 26 on February 3rd occurred at Wath Ings (D.A.). Bred at many places.

85. Whooper Swan (300).—Recorded on 28 waters. Maxima were: 14 at Wath Ings on February 4th to 17th (D.A., J.C.H.L.); and 17 that flew north-west over Fairburn on November 30th (C.W.). Perhaps as a result of the mild winter none was recorded after March. Six birds at Glasshouses Dam on October 27th appear to have been the earliest.

86. Bewick's Swan (301).—Occurred on fewer waters (15) than Whooper, but several herds were rather larger, viz: 27 at Wath Ings on January 1st (D.A.); 15 at Swillington Ing on January 6th (C.W.); 14 at Fairburn on January 20th (C.M.) where 18 remained February 2nd to March 10th (R.F.C., A.F., R.H., B.A., A.H.B.L., C.W.). In the autumn, 21 recorded at Eccup on November 30th (R.F.C., R.H.) were possibly the same 21 birds seen in flight between Otley and Leathley on November 30th (G. & E.G.). Sixteen were at Gouthwaite from December 19th to 23rd (D.S., A.F.G.W.); and 12 at Hoyle Mill Dam, Hemsworth, on December 30th (D.K., A.G.G.). Two at Hornsea Mere on April 10th were the spring latest (R.W.D.). Five at Wath Ings on November 17th were the first of autumn (R.J.R.).

91. Buzzard (269).—Young were reared by at least three pairs in the north-west, and probably there was another brood (H.W.B.). A few records refer to odd birds seen out of the breeding season, mainly in hill country. An adult male picked up near Tadcaster on April 19th, brought to the Leeds Museum by Mr. W. M. Sands, was emaciated and died (J.A.). One found on August 8th with a broken wing at Fence, near Sheffield, was taken to the Sheffield C. Museum and treated by the R.S.P.C.A. (S. Shaw).

92. Rough-legged Buzzard (268).—Was not identified; but a buzzard over Ilton Moor on August 29th could have been one (P.Y.); and one soaring high over Tilmire, York, on May 7th was probably 'Rough-legged' (E.W.T.).

93. Sparrow-Hawk (277).—In a nest near Ogden on July 31st were remains of Common Sandpiper, Starling and Chaffinch (C. Williamson). Heads collected by T. D. Bisiker at a feeding-place near Huddersfield, identified with R. Crossley's help, were of four male and three female House-Sparrows, and two House-Sparrow's lower mandibles and one *carduelis* probably Linnet. One was coasting north-west at Redcar on October 13th (D.R. & P.S.). Only recorded on five days at Spurn.

99. Marsh Harrier (271).—A cream-crowned bird was near Wawne on June 10th (G.R.B.). One was at Spurn in the Lagoon area on May 7th (D.J.R.P.).

100. Hen Harrier (273).—In the early months, two Liverton, January 9th (M.A.), one Fairburn, February 9th (Miss B.L., and J. Ogden), one Leighton, February 19th (R.C.). An immature bird appeared at Fadmoor on October 31st (T.E.D.). Ring-tails with white rumps appeared Rodley S.F. November 9th (D.A.R.); Barden Moor, November 10th (E.C.S.); at Great Ayton, December 7th (H. E. Ingram); near Skelton, December 17th (M.A.). One seen by Mr. A. Gordon in early December had almost half its back white as well as rump. Recorded at Spurn on November 2nd (J.C.), 23rd (J.C., C.W.), 25th (G.R.E.) and December 28th (C.E.A., G.C., J.G.). One was near Welwick, December 29th (A.C.).

102. Montagu's Harrier (272).—A male, with dark wing-bar was early near Patrington on March 31st (A.C.). Females were seen in the north-east on May 29th and June 3rd, on July 13th one was joined by a male, after which they were seen frequently without any evidence of breeding (M. Allison); and one was seen twice during Grouse shooting on August 14th (A. Gordon). A hen was at Spurn on August 17th (J.C.).

103. Osprey (284).—It is necessary to withdraw the record of the bird reported from Rombald's Moor on October 28th, 1956, in the 1956 Report—the error was not Mr. Vaughan's (R.C.). One remained about Castle Howard Lake, May 15th to 18th (E.W.T.). One fished in the Tees above Cauldron Snout on May 12th and gave good views of its head and eye stripe before flying off towards Mickie Fell (P.J.S.). Good views were had of one at Fairburn on May 14th (G.W., C.W.); and one at Spurn on August 17th was seen at 20 yards range, at the Narrow Neck (A.A., C.W., C.P., J.C.).

104. Hobby (261).—A pair of small, soaring hawks, with pointed smooth-curved wings and short tails, over Doncaster on June 22nd, that called a high-pitched 'kik' were thought to be Hobbies (J.S.T.).

105. Peregrine Falcon (259).—No proof of successful breeding was available, but adults were present in the season at three places; and two, and one, eggs were laid. Peregrines were also seen on various dates at ten other places, including Fairburn, Spurn, Cherry Cobb, Patrington Haven, and Southfield and Leighton Reservoirs.

107. Merlin (262).—Known to breed successfully on several moors. Young were taken for falconry from two nests. Occurred in the winter months on some moors, and elsewhere, including the coast. One flew up river at Fairburn on October 19th carrying a Blackbird (C.W.). One at Harewood on November 3rd hunted finches going to roost (A.H.B.L.). One at Redcar on December 1st unsuccessfully pursued a Sanderling (D.R. & P.S.). One was near Welwick on December 29th (A.C.). Occurred at Spurn on January 12th, March 2nd, 5th, 24th and 27th, and on twelve days from September 28th to October 19th, on November 9th and 17th.

110. Kestrel (263).—Occurred at Spurn on a few days in February and March, on thirteen days from April 17th to May 14th, and on a few June days. From mid-July practically daily, with 13 on September 14th; four on August 17th and October 13th being the next highest numbers recorded for a day. Nested on Leeds Town Hall (J.E.S.W.); and above the hoist on the fifth storey of a mill near Huddersfield where the birds deserted, although they had reared in 1956 (A. N. Sykes). Status unaltered.

111. Red Grouse (514).—Plentiful on most moors in 1957. 'April 5th, the first grouse egg, a sucked one' (P.Y.).

113. Black Grouse (513).—Occurred near Dent; Stocks Reservoir; in Langstrothdale; near Masham; and near Malham Tarn where not seen for some years until a year ago.

115. Red-legged Partridge (515).—One walked into a chemist's shop at Huddersfield on May 3rd (E.C.J.S.). Eight were at Lingerfield on September 4th (I.D.). General status unchanged.

117. Quail (520).—A pair are known to have reared a brood near Hutton-le-Hole (R. W. Crosland). One called repeatedly from a field near Askham Bryan about July 25th (E.W.T.); and from uncut corn at Balne, near Thorne, in mid-September (P.B.).

119. Crane (461).—At North Deighton, near Wetherby, from November 17th to December 7th, six unusual birds, tall enough to look over a 3 ft. 6 in. fence, frequented the fields of barley-stubble, undersown rye-grass and clover, of Mr. G. E. Sturdy, who wrote to the *Yorkshire Post* on December 2nd. Although informed too late to see the birds I asked A. F. G. Walker to investigate. Mr. Sturdy, who first thought the birds were Herons, described them as generally grey in colour, but as flying with both legs and neck extended; and having a 'black bustle-like rump and tail'. They were shy and difficult to approach, but on December 1st, from a tractor he was driving, Mr. Sturdy passed them at c. 70 yards distance, and was able to see the red spot Cranes wear on the otherwise black and white head. All six birds always stood, fed and flew together, 'never more than about a yard apart'. They were seen by a number of other people who did not include a known ornithologist. After seeing Mr. Sturdy and inspecting the terrain, Mr. Walker has no doubt the birds were Cranes (*Megalornis grus*), with which I agree (R.C.). The species appears previously to have been recorded in Yorkshire in this century only on April 5th, 1954, when one was found dead near Bridlington.

120. Water-Rail (509).—Recorded from January to April, and from September 27th to the year end, on various dates at Fairburn, Knaresborough, Hornby Lakes, near Doncaster, and at Spurn. One dead under wires near Catterick Bridge on the A1 road on September 27th; one found stunned at Harehills on October 9th that was taken to the R.S.P.C.A. and ringed by A.H.B.L. and released; one flushed from a shelter on Hornsea promenade on October 13th (H.O.B.); and one caught in the street at Grovehill, Beverley, on November 29th, exemplified propensities of the species. A few odd birds were recorded elsewhere—May 12th at Pulfin Bog, East Riding (B.S.P.), and on several dates at Skipwith.

125. Corncrake (504).—Occurred near Wheldrake on April 22nd (B.D.); and at Fairburn on April 23rd (B.A.). One picked up on April 25th near Eldwick on a very cold day seemed unable to use its legs. Dissection showed a liver 'practically non-existent' (S.L., D.F.W.). Heard after these dates at Earby (A.P.), in Bishopdale, in Baysdale (J. Fairfax-Blakeborough), near Horton-in-Ribblesdale (S. Bond), near Denholme (D. Parr), near Luddenden (H. Spencer, per I.M.), and near

Killinghall (S.D.), near Danby-in-Cleveland (J.L.), and calling as late as August 13th at Moorsholme near Skelton (M.A.). Occurred at Spurn on May 10th (R.C., D.J.R.P.); and on October 15th (J.R.M., J.A.S.B.). One was mistaken for a Partridge in early September, near Crossgates, Leeds; but was only slightly injured (D.J.R.P., R.F.D.).

126. Moorhen (510).—On September 7th an adult with a weasel clinging to it ran before T. Keeler, who rescued the bleeding bird. A pair at High Royd S.F. had chicks only three days old on September 7th (T.K.).

An adult ringed Knaresborough S.F. 15/10/56, was retrapped at Colchester, Essex, 3/3/57 (J.R.M.).

127. Coot (511).—With *c.* 1,050 at Hornsea Mere on January 1st (G.R.B.), and estimates of *c.* 700 from January 5th to March 2nd (R.W.D., M.K.T., G.R.B.), and of round *c.* 100 from March 17th to July 17th, it is obvious that some birds must have gone elsewhere. Numbers began to build up again in July, had reached *c.* 600 by August 18th (M.K.T.), *c.* 1,450 by November 30th (G.R.B.), and phenomenally *c.* 1,700 by December 30th (G.R.B.).

Fairburn is the only comparable water; and any fall in numbers after the winter is much less clear. It would appear that larger numbers breed at Fairburn than at the Mere—C. Winn, on May 16th, counted 28 broods at Fairburn with 146 young; and three days later 87 nests held 488 eggs or newly-hatched young. On June 12th, 39 broods contained 273 young and adults were reckoned at *c.* 870. A brood of seven was visible on September 23rd.

These two paragraphs arouse conjecture. Other concentrations were at Winterset (c. 290 January 1st (D.A.)); at the small Sawley Lake with *c.* 180 in January and July, but with numbers doubled to *c.* 350 on October 21st (M.R.S., A.F.G.W., D.W.); and *c.* 180 at Ripley on December 26th (A.F.G.W.).

131. Oystercatcher (452).—Nested in the valleys of the Ribble, Aire, Ure, Wharfe, Swale and Hodder and probably on the Rye, and at Spurn; and consequently often noted inland. Numbers at Spurn and Teesmouth probably vary more with local movements connected with tides than with distant migration. Maxima: Teesmouth and Redcar, *c.* 150, March 19th (D.R. & P.S.); and *c.* 150 that flew S-E at Saltburn on October 15th (M. C. Adams). At Spurn *c.* 60 on February 14th and *c.* 200 on November 3rd.

133. Lapwing (449).—Had a good breeding season and post-breeding flocks built up early and were large, *c.* 1,300 Fairburn on July 19th (C.W.). Spurn maxima were: *c.* 150 on February 10th, and *c.* 350 on October 31st. At Redcar *c.* 200 flew east out to sea on March 7th; and a steady drift of small flocks west to north-westward was watched in October to early November (D.R. & P.S.). The flocks of autumn-winter were also large.

Ringed Thornaby-on-Tees 23/5/54; dead Thirsk 19/1/57 (P.A.R.).

Ringed near Harrogate, as pull, 28/6/54; dead Bayonne, Basses-Pyrenees, France, 20/1/57 (M.R.S., A.F.G.W.).

Ringed near Harrogate, as pull, 28/5/55; dead Bective, near Navan, Co. Neath, Eire, 15/1/57 (M.R.S., A.F.G.W.).

Ringed near Harrogate 21/7/56; Mountmellick, Co. Leix, Eire, 19/12/57 (M.R.S., A.F.G.W.).

Ringed Den Burg, Texel, Holland, as pull, 1/6/57; dead Melton, East Riding 10/9/57 (B.S.P.).

Ringed near Trondjhem, Norway, as pull, in May 1957; dead Swinemoor, mid-December (C. Reynolds).

134. Ringed Plover (435).—The peak period of spring at Cherry Cobb from May 11th to 26th (maximum *c.* 700 May 14th (H.O.B.)), was also the period when most occurred inland: 19 Brotherton, May 22nd (C.W.); 18 Bottomboat, May 19th (R.H.); and 23 on May 26th (E.G.)—and when odd birds appeared elsewhere. On May 19th two were at Wath Ings (R.J.R.), two at Stocks Reservoir (J.N.T.), and one at Fly Flatts Reservoir. Much inland mud was water-covered by mid-August. Eight were at Blackmoorfoot on August 10th (C.R.S.); three at Stocks Reservoir August 10th-17th (J.K.F.); 11 at Brotherton on August 19th (C.W.); and five at Gouthwaite on August 8th. A single bird on July 28th was the only one recorded for the Dearne Valley in autumn, which should be compared with the 1956 records.

Fifteen young ringed at Spurn reflected improved breeding success. Nested near South Gare (P.A.R.). A full-grown bird, S24459, ringed Spurn 30/8/57; Châtelaillon (Charente-Maritime), France 25/9/57.

135. Little Ringed Plover (438).—Five pairs bred in one area, and in two other areas breeding by a pair was suspected. Single birds called and were seen to have no wing-bars at Spurn on August 16th (A.P., A.A., C.W.) and August 23rd (D.A., A.A.); and at Hornsea Mere on September 8th (R.W.D.).

136. Kentish Plover (439).—First thought to be a juvenile Ringed Plover, a bird on October 31st, feeding in the wire dump, examined through a telescope was found to have dark legs and bill, a wing-bar visible in flight, and a call-note rendered as 'chit-chit-chit' (D.J.R.P., E.C.S., J.C.L.). The head appeared to be uniformly brown, and the bird to be a juvenile.

139. Grey Plover (444).—One occurred at Fairburn on March 24th (C.W., G.W.). Three plovers with black axillaries and white tails left Fairburn north-eastward on October 5th (G. & E.G.), and two were there on the 12th. *Circa* 210 were at Cherry Cobb on May 14th (H.O.B.). Always present at Spurn until May 14th, and from August 3rd, with maxima of *c.* 100 on August 27th and *c.* 250 on November 10th. A single bird was at Spurn on June 14th and two on June 16th and 17th; and one was at Redcar on June 29th (D.R. & P.S.). Coatham Sands on September 28th showed the largest flock the observers had seen at Teesmouth—*c.* 340 (D.G.B., P.J.S.).

140. Golden Plover (440).—Song-flight was performed near Gouthwaite as early as February 9th (A.F.G.W.). Sixty-six Golden Plovers were near Fairburn on April 28th, having decreased from *c.* 300 on April 14th (R.H.). G. Hallas located *c.* 1,500-2,000 near Menwith-with-Darley towards the end of April, remnants of the flock were still there in early May. Autumn maxima on favourite grounds were: near Pool, 400-500, October 6th (P.S.) (where *c.* 700 had been present on January 20th), and 500 on December 26th (P.S.); Bottomboat, *c.* 400 October 27th (E.G.) and *c.* 500 November 24th (R.H.), Wath Ings, *c.* 300 October 26th (R.J.R.); and Hangthwaite *c.* 400 October 14th (R.J.R.). Redcar coastal fields had fewer in this mild winter than in previous two years; in autumn the first came on July 8th; and 170 had arrived by September 29th. One rested with tired *passeres* at the tip of the South Gare on September 21st—a day of much drift-migration. Present in the Kilnsea area on most days except between May 8th and August 5th; maxima *c.* 180 January 19th and 200 on October 4th and December 30th.

142. Dotterel (446).—Three on Winder (Howgill Fells), June 12th (S.S.S.).

143. Turnstone (402).—Inland occurrences were: one Gorple Reservoir, April 27th (J.Cr.); two Brotherton, May 22nd (R.F.D.); one Gouthwaite, June 8th (M.R.S.); and two on July 25th (Miss R.H., R.H.); four Fly Flatts Reservoir, June 2nd; one on June 9th and on August 18th (C.R.S.); one Swillington Ing, August 18th (E.G.); two Brotherton, August 19th and one August 23rd to September 2nd (C.W., G.W., B.H.); one Ardsley Reservoir, September 14th (R.H.). One was at Melton on October 27th (B.S.P.).

A Turnstone can usually be found at Spurn. On May 25th with only two entered for the day, J. Cudworth spotted 26 on the Humber shore from Easington to Stone Creek. Spurn maxima were *c.* 50 on February 14th and April 6th; and *c.* 75 on September 2nd. At South Gare were *c.* 30 on May 19th and on August 10th (D.R. & P.S.).

145. Common Snipe (395).—Drummed near Ilton on March 2nd (P.Y.), and near Halifax on September 8th (L. Magee). Well over 500 were about the Derwent Valley floods on September 28th (M.R.S., A.F.G.W.). Numbers at Fairburn built up to *c.* 450 on December 3rd (C.W., G.W., B.H.).

147. Jack Snipe (398).—Last seen at Hangthwaite on April 25th (R.J.R.), at Spurn on April 27th; and at Knaresborough S.F. on April 29th (J.R.M.). First noted in autumn on September 19th at Spurn, and on October 4th at Fairburn (W.C.W.). Swedish ornithologists have blamed Englishmen for shooting this small species; but of 12 flushed at Clifton Ings on November 20th, four were shot (E.W.T.). Smaller numbers were recorded in more places than usual.

148. Woodcock (393).—First seen at Spurn on October 22nd, after which occurred on a number of days to the year end, with the most (12) on November 17th. Bred not uncommonly in the usual areas.

150. Curlew (388).—One ringed near Sedbergh as pull, 24/5/49; Malldraeth Bay, Anglesey, 29/10/56 (Sedbergh School). At Gouthwaite, a flock of *c.* 50 was seen regularly from early January to February 17th; in autumn the flock was *c.* 40 strong by October 20th, and *c.* 90 by December 21st (A.F.G.W.). One or two other reports of Curlews inland in winter refer to very small numbers. At Fairburn *c.* 108

flew in from west, alighted, and passed east on April 10th (C.W.). H. O. Bunce heard the spring song in June near Millington, North Grimston, and Settrington; species; but of 12 flushed at Clifton Ings on November 20th, four were shot (E.W.T.). he has not proved breeding in the Wolds hitherto. Numbers at Spurn were normal until August 12th when 127 appeared, perhaps as the result of gun-shots on moors; but 13 had flown straight in from sea at Redcar on July 3rd and passed north-westward (D.R. & P.S.). There was a flock of *c.* 1,000 at Cherry Cobb on October 12th (R.J.R.). At Rishworth *c.* 20 consorted through the breeding season where a few pairs bred (I.M.). Thirty-two were together at Chelker on June 16th. At Locker Tarn *c.* 200 flew east on August 29th, the largest flock numbered 67 birds.

151. Whimbrel (389).—One called on March 10th at Redcar (D.R. & P.S.), and on March 16th near the Lockwood Beck Reservoir (M.A.). Appeared at Spurn on April 19th, with 11 on the 21st, and on most May days to the 30th, and on June 9th and 10th, with no more until six on July 13th. From July 25th, Whimbrels occurred daily until mid-September, after which odd birds were noted on a few days until the last on October 12th. Seen and heard at a number of places inland such as: the upper Humber, Fairburn, Swillington Ing, Wath Ings, Colsterdale Moors, Burley Moors, near Doncaster, Stocks Reservoir, Blackmoorfoot, at Hornsea, and elsewhere on the coast. Parties were small with maxima of 22 at South Gare on August 4th (D.R. & P.S.); and *c.* 30 at Spurn on several days in late July.

154. Black-tailed Godwit (387).—A single bird was seen at Brotherton by nine people from April 12th to May 11th (R.F.D., R.F.C., J.D.P., C.W., G.W., and others). One was at Swillington Ing on May 5th (M.R.S.). Two were at Cherry Cobb on August 31st (J.C.H.L.); and on September 21st (H.O.B.).

155. Bar-tailed Godwit (386).—More at Spurn in the early months than later; maxima *c.* 300 on January 23rd and 24th. Very few from mid-March but *c.* 82 on April 22nd. *Circa* 250 were at Cherry Cobb on May 11th; and *c.* 50 on May 25th (H.O.B.) when Spurn had none. Despite *c.* 35 on September 16th, numbers at Spurn remained small until late November, with *c.* 200 on December 11th. There was an influx at Teesmouth on September 22nd; and *c.* 150 were on Coatham sands on December 31st—a normal winter number about Teesmouth (P.J.S.). A few occurred elsewhere along the coast. Four Godwits at Gouthwaite on April 22nd (E.C.D.) were thought to be Black-tails but were not convincingly diagnosed. One was at Gouthwaite on April 27th (M.R.S., A.F.G.W.). L. Magee reported six at Brotherton on September 6th.

156. Green Sandpiper (424).—One wintered at Wath Ings (D.A., J.C.H.L.) and was still there on April 22nd. One fed by the Hertford River on February 2nd (A.J.W.); and birds occurred by six other inland waters in spring; with May 26th as the date of the latest—one Gorpse Reservoir (V.S.C., I.M.), and one by the Swale at Great Langton (J.P.U., R.C.). One at Bottomboat on June 30th (E.G.), and two at Knaresborough S.F. on July 1st (J.R.M., D.M.B.) were the earliest of autumn, after which occurrences were normal by many waters. Occurred at Spurn on April 14th and May 22nd-23rd, and from July 26th to October 1st. Two were at Fairburn on October 11th (C.W.).

157. Wood Sandpiper (423).—Occurrences were mainly in the East Riding. One at Spurn by the 'canal' gave good views of its summer plumage on June 14th (J.K. & A.E.F.); and the species also occurred on August 17th (J.C.). Birds occurred at Flamborough on July 21st (H.O.B.), at Beverley S.F. on August 24th and 28th (B.S.P.); at Cherry Cobb on September 10th (H.O.B.); and at Hornsea Mere on August 11th (M.K.T.). One was at Fairburn on July 21st (R.F.C., W.C.W.); and three at Brotherton on August 23rd and 24th, and two on the 25th (T.E.D., C.W., B.H.). Four on flooded land across river from Bottomboat on September 29th showed barred tails and called (E.G.).

159. Common Sandpiper (421).—The earliest was a bird at Gouthwaite on April 13th (A.F.G.W.). Generally well distributed, but 'unusually scarce' in the Penistone area (J.C.S.E.), and 'fewer than formerly' in the Aire valley (S.L.). Large numbers were on the mud at Gouthwaite in July and early August with a maximum of *c.* 70 on July 19th (M.R.S.)—all Nidderdale birds probably. Last seen inland on September 22nd at Elland G. Pits (T.K.), and Wath Ings (J.B.N., G.F.K., R.J.R.), and at Hornsea Mere (G.R.B.); and one Spurn on the 23rd. Bred Roundhay Park, Leeds (R.V.J.). A party of 13 were on the shore at Sewerby on August 10th (J.C.). Up to eight were recorded regularly at Spurn from July 13th to August 18th; and odd ones later.

161. Redshank (428/30).—Much the largest numbers appeared by the Humber—*c.* 180 Cherry Cobb, April 17th and 19th (G.R.B.); *c.* 900 at Patrington Haven, July 29th (A.C.); *c.* 700 counted during tidal movement there on July 31st; and *c.* 1,100 on September 1st (A.C.). At Spurn *c.* 150 on March 28th, *c.* 150 on July 26th, *c.* 200 August 11th to 14th; *c.* 250 September 11th; and *c.* 500 October 24th were maxima. Bred in numerous usual places.

162. Spotted Redshank (431).—Inland, only occurred singly at Brotherton Ing on several days from July 18th to August 7th (C.W., G.W., B.H.); and at Knaresborough S.F. on July 27th (J.R.M., D. M. Burn). Occurred at Patrington Haven: one on March 30th (H.O.B.), one April 21st (L.S., H.O.B.); one September 1st (A.C.); and at Cherry Cobb, one September 21st to 24th (H.O.B.). Occurred at Spurn: one on August 11th (J.R.G.); one August 17th (A.A., C.W.), one August 30th; one September 14th (G.R.P.); one October 24th.

165. Greenshank (432).—A Greenshank wintered about Wath Ings and was seen on many days from January 1st to April 14th (D.A., F.H., J.C.H.L., R.J.R.). Other spring records inland were: single birds at Fairburn, April 28th (W.C.W.); at Sawley, May 25th (K.G.S.); at Bottomboat, two, May 26th (E.G.); and by the Humber at Patrington Haven on April 27th (A.C.) and May 25th (J.C.). Two at Stonecreek (J.C.) and at Cherry Cob (H.O.B.), both on May 25th, were probably the same birds. One was at Spurn on May 26th (J.C.).

Noted by many waters from June 30th when the first occurred at Warrenby Marsh, Redcar (D.R. & P.S.) to mid-October. The Humber-side westward from Kilnsea was especially productive, and Patrington Haven had *c.* 20 (not in one party) on September 1st (A.C.). Late records were: Spurn, October 19th; Bottomboat, October 27th (R.H.); and one at Leathley Gravel Pit on November 30th (G. & E.G.).

169. Knot (403).—Spurn maxima were: *c.* 2,000 January 3rd and February 2nd; *c.* 4,000 March 3rd-4th; *c.* 2,000 March 16th; *c.* 1,500 October 24th and November 24th; such were peaks in periods when the species was numerous for a few days. Cherry Cobb had *c.* 2,000 on January 7th (S.M.); and *c.* 1,000 May 11th; and *c.* 1,500 were at Patrington Haven on April 9th. There were usually *c.* 250 on Redcar Rocks at low tide in January to March and September to December 31st, maximum noted *c.* 500 on March 16th. Thirty were at South Gare on June 9th (D.R. & P.S.)—five were at Spurn on that day. At Brotherton Ing one occurred from September 22nd (R.F.C.) to October 14th (C.W., R.F.C., W.C.W., G.W.). One was at Gouthwaite on March 17th (A.F.G.W.), one Fly Flatts Reservoir on August 17th (T.K.) and 18th (C.R.S.); 27 at Blackstone Edge Reservoir, September 4th (I.M., V.S.C.); three at Wath Ings on September 21st of which one was mostly in breeding plumage (R.J.R.); and seven at Lingerfield Gravel Pits on September 22nd (I.D.).

170. Purple Sandpiper (415).—As usual, *c.* 30 remained in winter about Bridlington; and fewer in December (J.C.H.L., B.D.). Odd birds were at Redcar on January 13th, August 27th and September 14th (D.R. & P.S.). None was noted at Spurn.

171. Little Stint (407).—One at Spurn on the Chalk Bank beach on May 10th left the Dunlin company to inspect us, and went back to them, and was the only Little Stint of spring (R.C.). Also occurred at Spurn on August 29th; and on six days from September 7th to October 3rd. Almost all others occurred in late September:

	September							Initials
	19th	21st	22nd	23rd	24th	25th	29th	
Coatham Marsh . . .			2				3	D.R. & P.S. & P.J.S.
Flamborough . . .					2			A. J. Williams
Hornsea Mere . . .			2					G.R.B.
Spurn					2			—
Knaresborough S.F.					1	2 & 1	to Oct. 1st	J.R.M.
Brotherton			1		3			C.W.
Bottomboat				2			2	E.G.
Ossett S.F.							1	G.C.
Denaby Ings	13							J.C.H.L.
Wath Ings		1	1					R.J.R., J.B.H.

Winds at Spurn were NE and E on the 19th and varied from SE to NE until the 26th when they turned NW. They were strong on the 23rd, 25th, 28th and 29th, with a good deal of rain.

173. Temminck's Stint (409).—A stint at Brotherton on mud had white outer tail feathers on May 15th (C.W.).

175. White-rumped Sandpiper (Bonaparte's) (414).—A dead wader picked up on the road between Warren Cottage and Kilnsea on October 19th, by J. R. Mather and R. F. Dickens, had a short, slender bill, a white rump and other characteristics of this species. It was correctly named by the finders and was sent to A. Hazelwood at the Bolton Museum who concurred and has the specimen. A full description was entered in the Spurn log for the day. The species breeds on North American arctic coasts and winters in South America; and is new to the Yorkshire list.

176. Pectoral Sandpiper (411/12).—A wader at Spurn (Lagoon area) on September 15th was markedly larger than Dunlin, and some two-thirds the size of the Redshanks with which it was seen occasionally, and had a fore-neck and upper breast streaked dark grey-brown abruptly meeting the white of the belly on a definite line. It was inspected through binoculars at close range by C. Winn, J. Cudworth, W. E. Dickinson, M. Ridsdale, B. Armitage, and A. H. B. Lee and is described in detail in the Spurn log. No doubt it was of the American species.

178. Dunlin (404/5).—

Ringed Spurn S24447, full grown 30/8/57; Winteringham (Lincs.), 22/9/57.

Ringed Spurn S24824, full grown 5/10/57; Morecambe Bay, 25/10/57, trapped and released.

Ringed Revtingen, Rogaland, Norway, 24/9/52; Hesselø foreshore, near Hull, 25/12/57 D. (Blackmore, B.S.P.).

Bred on some moors as usual, with fledgling young taken to nearest waters with mud, where three or four families can make sizeable parties. Seemed to breed rather early this year; and there were 19 by one tarn on June 10th (D.A.R.). Absence of mud by reservoirs due to the rains may have sent Dunlins early to lowland waters—up to 32 at Fairburn, July 23rd to 26th (C.W.), and 16 at Bottomboat July 21st (R.H.); but there were few in August anywhere.

Spring maxima were *c.* 18 at Bottomboat on May 11th (W.C.W.), 11 at Brotherton on May 21st (C.W.), and *c.* 30 at Gouthwaite on May 9th. After a fall in May and part June, numbers at Gouthwaite rose to *c.* 30 again from June 21st into July, until the reservoir began to fill and the mud to be covered. At Cherry Cobb, spring maxima were *c.* 2,500 on May 1st, and *c.* 2,000 on May 14th and 25th (H.O.B.). At Spurn, numbers fell after *c.* 1,100 on March 25th, had reached *c.* 600 on August 28th; and the autumnal peak came with *c.* 1,500 on October 4th. R. J. Rhodes described numbers at Cherry Cobb on October 12th as 'uncountable' and 'phenomenal'—*c.* 1,200 were at Spurn. In such a year interpretation of dates and figures at over twenty waters is very difficult, especially when local breeders and passage migrants are both concerned.

179. Curlew Sandpiper (406).—Spring records of this species are rare. One at Settle S.F., with Dunlins, on June 2nd, had a partially chestnut breast (A.P.). The next occurrence was at Cherry Cobb, one on August 26th (H.O.B.), and two on the 27th (B.S.P.). Occurred at Spurn from September 7th to 13th (seven on the 8th). Two were at Beverley S.F. on September 23rd, and one on the 29th (B.S.P.); and one on Coatham Sands on the 28th (D.G.B., P.J.S.).

181. Sanderling (416).—Most of the inland records were in May. They were: single birds at Gouthwaite on May 5th, 7th and 12th, and two on the 16th (A.F.G.W.); one at Winterset on May 19th (C.E.A.), and two on May 19th at Fly Flatts Reservoir (C.R.S.). Two were at Knaresborough S.F. on June 2nd (J.R.M.); one occurred at Bottomboat on July 20th (W.C.W.); and one at Knostrop S.F. on August 15th (G.R.N.).

At Redcar, Sanderlings fluctuated as usual with more than 100 always present up to mid-April (maximum *c.* 220 January 12th); and afterwards fell to ten on May 20th, and rose to *c.* 80 on June 9th, with three as the last on June 10th. From July 23rd (eight) remained few until September 1st (33), September 28th (100), October 27th (*c.* 180), with never less than *c.* 50 from September 14th to the year end (D.R. & P.S.).

Sanderling occurred irregularly at Spurn up to June 14th (maximum *c.* 60 on February 9th); and from July 25th regularly (maximum *c.* 100 on September 7th).

184. Ruff (417).—One ringed Abberton, Essex, August 11th, 1956, was at Methley, near Leeds, on October 7th, 1956.

Spring occurrences were: one, Flamborough, March 24th (H.O.B., A. J. Williams); one, Hornsea, April 21st (G.R.B.); two by the Humber near Skeffling on May 25th (J.C.); and up to four on eleven dates from April 6th to 29th in the 'Lagoon' area, near Easington. Occurred at Spurn on six days from August 10th to October 23rd (a very late bird). The earliest was at Bottomboat on July 20th (W.C.W.). Some were at Fairbutn from July 21st to October 19th (one), with maximum of 12 on August 27th (C.W., G.W., B.H.). Coatham Marsh, Redcar, had 33 on September 22nd (P.J.S.). Also noted by ten other waters in small numbers on various dates in the same period.

187. Grey Phalarope (400).—One seen at Brotherton at close range on September 24th showed a 'short broadish bill' (C.W.); as also did one at Spurn on November 2nd and 3rd, as described in detail in the log (A.E.P., H.O.B., J.C., and others).

188. Red-necked Phalarope (401).—One swam on the Aire near Brotherton on November 3rd and had a slender, blackish bill, only a few feet from the observers (D. J. R. Potter, W.C.W., C.W., B.H.).

189. Stone Curlew (456).—One was recorded north of Kilnsea on August 22nd (A.A., D.A. and others).

193. Arctic Skua (493).—A dark-phase bird flew off South Gare on May 12th (D.R. & P.S.); and two off Spurn on May 11th. One was off Redcar on July 27th (D.R. & P.S.); and nine on August 4th were the first at Spurn, where seen on many days afterward. Days of maxima were September 1st, 58 at Spurn and 19 at Hornsea (M.K.T., G.R.B.); September 14th *c.* 103 at Spurn, *c.* 30 at Redcar (D.R. & P.S.) and *c.* 20 at Flamborough and *c.* 50 at Spurn on the 15th. September 29th *c.* 35 off South Gare in one flock (D.R. & P.S.) and *c.* 26 at Spurn. Forty-three were off Spurn on November 9th (J.C.); and one on November 22nd (G.R.E.) was the last. None recorded inland.

194. Great Skua (491).—Occurred off Spurn on a number of days in September—seven on the 14th (J.C.); and one on November 9th. One was at Redcar on January 13th (D.R. & P.S.). Eighteen flew into Tees Bay on September 14th (P.J.S., D.S.S., A.V.); and 11 were off South Gare on September 29th (D.R. & P.S.), where odd birds occurred on other days.

195. Pomarine Skua (492).—One flew south at Spurn on August 4th (J.C., H.O.B.), and one on September 1st (J.C., C.W.), and two on November 9th (J.C., C.W. and others). A few were noted about Teesmouth in September, including five that came close in at South Gare on September 30th, one adult having the twisted tail. One flew NW at Redcar on November 23rd (D.R. & P.S.).

196. Long-tailed Skua (494).—An adult flew SE off Redcar on August 7th. On September 14th, when all four species were recorded in Tees Bay (P.J.S.), 13 skuas probably all one species included an adult *longicaudus* and flew NW at Redcar (D.R. & P.S.). And there were other records of possible long-tails.

198. Greater Black-backed Gull (486).—Broadly the status on the coast remains unchanged: very numerous from early August to November and fewer afterwards, but still plentiful until late April, after which mainly immature birds. How far birds passing at Spurn are counted again remains unknown; and similarly why birds should suddenly decrease for a few days in a 'numerous period', or suddenly increase in a period of comparative scarcity. *Circa* 109 adults and *c.* 20 immature Greater Black-backs at Ecccup on December 26th (G.R.N.) went beyond the increasing tendency noticed for some years for a few more of the species to occur inland in winter.

199. Lesser Black-backed Gull (484/5).—

Pull Ringed, Roeburndale, 22/7/56; Lagos (Algarve), Portugal, 28/2/57 (R.F.D., P.C.Q.).

Pull Ringed, Roeburndale, 29/7/56; Matozinhos (Douro Litoral), Portugal, 3/1/57 (P.C.Q., R.F.D.).

Pull Ringed, Roeburndale, 29/7/56; R. Douro, Oporto, Portugal, 14/3/57 (R.F.D.).

Pull Ringed, Roeburndale, 16/7/55; near Lisbon, Portugal, 1/12/56 (R.V.J.).

Pull Ringed, Roeburndale, 22/7/56; in Essex, 1/11/57 (R.F.D., P.C.Q.).

Pull Ringed, Roeburndale, 30/6/57; Vila Real de Santo Antonia, Portugal, 16/9/57 (R.F.D., P.C.Q.).

Pull Ringed, Roeburndale, 21/7/56; Vagos, Aveiro, Portugal, 21/8/57 (R.F.D., P.C.Q.).

Pull Ringed, Roeburndale, 30/6/57; Mindell (Douro Litoral) Portugal, 6/11/57 (E.E.J.).

R. V. Jackson and J. R. Govett have been and are counting birds leaving the Eccup roost at dawn; and I will not anticipate their findings. In snow and a strong south wind, c. 100 came to Leighton Reservoir on December 10th; they were adult Scandinavians with some immatures (P.Y.). Passage of birds towards and from Roeburndale was in evidence before and after the breeding season. *Circa* 300 were at Denaby Ings on August 18th.

200. Herring Gull (482).—No change in status reported. Concentrations about Ossett S.F. from June 15th to July 18th averaging more than 200 birds (A.F.) are difficult to interpret.

201. Common Gull (481).—Three eggs were hatched on Ilton Moor. On June 12th two of the small young were dead and parents were trying to drive away an adult Lesser Black-backed Gull. The site was high rocky ground and the nearest water a mile away (P.Y.).

202. Glaucous Gull (487).—In Scarborough Harbour were single immature birds on January 19th, November 12th and 13th, two on December 2nd, one on the 5th and on the 23rd (A.J.W.). One occurred near Middlesbrough on December 26th (A.B., P.J.S.). A Herring Gull sized bird, of grey-fawn colour, near Bottomboat on December 8th, that was injured but evaded capture, was considered to be either this species or the next (E.G.). The species was recorded at Spurn on January 2nd and 13th, and April 13th, and on October 16th and 26th and December 30th; and by H.O.B. at Flamborough on December 2nd.

203. Iceland Gull (488).—There was an immature bird in Scarborough harbour from January 3rd to 5th (T.M.C.). J. Cudworth recorded one at Spurn on March 24th; and thought a gull on November 2nd was Iceland rather than Glaucous. An immature flew down the coast with two Herring Gulls on November 10th (J.C., C.W.); and an adult on the 19th (G.R.E.), and an immature on November 24th (J.C., C.W., G.W.), another or the same on December 14th (C.W.); and an adult on December 28th (C.W., W.C.W.). Some of these may have been the same bird; usually seen with Herring or Common Gulls, as was one at Eccup on December 23rd closely inspected by K. Brown and others.

207. Little Gull (477).—An immature bird was at Fairburn from June 9th to 13th, and two from the 14th to 16th (C.W., W.C.W., K.S., etc.); and an adult on July 9th (C.W.) and on July 13th (G. & E.G.). One was at Castle Howard Lake on August 6th (R. Thomas); two immatures at Blackmoorfoot on August 22nd (R.Cr.); one almost mature south of Bridlington on August 18th and at Flamborough on August 28th (J.C.H.L.); one on floods near Middlesbrough on September 26th (W. S. Jackson); an adult at Teesmouth on November 9th (P.J.S.); and one at Patrington Haven on December 29th (A.C.).

208. Black-headed Gull (478).—

Ringed as pull, near Haworth, 6/7/50; shot Bingley, 2/5/57 (R.F.D.).

Ringed as pull, near Haworth, 6/7/50; Blackburn, Lancs., 3/8/57 (R.F.D., P.C.Q.).

Ringed as pull, Eschenbach, Bavaria, 19/6/55; freshly dead near Tadcaster, 10/7/57 (W.B.).

Ringed as pull, near Orton, Westmorland, 23/6/57; near Thirsk, 17/7/57 (J.P.U.).

Ringed as pull, Horsey Island, Essex, 13/6/54; Earby, Yorks., 13/6/56 ('B.B.').

Status normal. Four dead at High Royd S.F. on September 1st were sent to Dr. A. R. Jennings, Department of Animal Pathology, Cambridge, were all infected with a virus disease seen previously in gulls and Oystercatchers, which produces blisters and ulcers on feet and in gizzard. 'Probable diagnosis: *Vesicular Dermatitis*'. Another gull and a 'comic' Tern were out of reach (T.K.).

209. Sabine's Gull (474).—A gull smaller than the Kittiwakes also present, at Filey Brigg on September 23rd, hovered gracefully and picked food from the surface of the water. The bird had a white forked tail, a short dark bill, and its black primaries and sooty grey of scapulars, mantle and top of head, contrasted strongly with white underparts, tail, and with the white triangle on wings. Seen at within 50 feet (E. Wise).

211. Kittiwake (489).—Big coasting movements occurred at Teesmouth in a northerly gale on January 12th-13th (D.R. & P.S.); at Flamborough on April 19th *c.* 27,000 passed north in two hours from 4 p.m. (E.E.J.); and on November 9th *c.* 10,000 crossed Tees Bay north into a gale. Occurred inland at Spenborough S.F., at Wath Ings, at Airedale, and at Fairburn in January to March; and at Fairburn on August 5th (W.C.W.).

212. Black Tern (462).—The main spring passage took place May 11th to 13th when birds were seen at Fairburn, High Royd, Hemsworth, over the Tees Estuary, at Sunk Island (W.A.B.), at Pulfin Bog (B.S.P.), at Spurn, and especially at Hornsea Mere—46 on May 11th (G.R.B.), 20 on the 12th, and 15 on the 13th (R.W.D.). Autumnal passage was much less concentrated and spread more widely, from July to September 29th, with maximum of 11 on September 26th at Fairburn.

[213. White-winged Black Tern (464).—A marsh tern, in nearly complete winter plumage, was watched for two hours at Hornsea Mere on September 28th by G. R. Bennett, and seen on the 29th by M. K. Taylor and G.R.B. It was also seen on October 2nd by R.W.D. and again on October 6th by M.K.T. The notes taken point to this species with very slight discrepancies which may be due to state of moult or individual differences. The three marsh terns in winter or immature plumages are notoriously difficult to identify in the field, and I do not feel able to do more than admit probability.]

217/18. Common and Arctic Terns (469/470).—A Common Tern at Southfield Reservoir on April 20th (R.J.R.) was early; two days before the first at Spurn. Both species (and some 'comics') occurred at many inland waters in spring and autumn, in May-June and from July 22nd (an Arctic) to October 11th. *Circa* 450 passed south off Hornsea in three hours on September 1st (M.K.T., G.R.B.). *Circa* 12 were feeding as they moved south in Filey Bay on October 19th (A.J.W.). Occurred in Tees Bay on November 4th (P.J.S.); and at Spurn on November 2nd, where the largest numbers had passed from August 6th to 16th, August 31st to September 1st, on September 7th and 12th, and on the 18th and 19th.

219. Roseate Tern (468).—Good views were had of bills and tail-streamers, etc., of a bird at Spurn on July 21st (D.J.R.P.), and of three on August 7th (J.R.G.).

222. Little Tern (471).—Single bird occurred at Spurn from April 21st, with no numbers until May 6th. Sixty-six were counted on June 13th. The wet late summer enabled a number of second layings to hatch and 17 young were ringed, and others could not be caught. One ringed August 9th, 1957, was found dead near Cleethorpes 'full of pellets'. A pair nested near South Gare (P.A.R.). Ceased to be seen regularly at Spurn on August 31st, but a belated bird appeared on September 28th, two at Hornsea on September 29th (G.R.B.) and two at Spurn on October 9th.

223. Sandwich Tern (467).—Three were noted at Redcar on April 15th, a very early date. Not seen at Spurn until May 7th, where the last was recorded on October 7th. At South Gare occurred as late as October 26th (K. Patterson). Passed at Spurn on almost all days from late July to September 30th; maximum *c.* 250 on September 7th. An adult and a juvenile were at Dewsbury S.F. on September 22nd (J.C.); and one flew westward over Leeds on September 24th (A. Gilpin).

226. Little Auk (502).—One swam on the Tees at Thornaby on January 9th (A. Rudd) and an oiled dead bird was on Redcar beach on January 17th (D.R. & P.S.). At Spurn, single birds were seen on July 27th and October 22nd to 26th; and on November 9th 85 flew north, and 95 on the 10th. Four were at Filey Brigg on the 10th (A.J.W.). Eight flew north-west at Redcar on November 9th, one of which was slightly stunned by a car; and 13 on the 10th (D.R. & P.S.). In Tees Bay were: one on November 3rd, 163 that flew north on the 9th, and 181 on November 10th of which 11 were in one party (P.J.S.). A few from this visitation came inland: one at Fairburn on November 10th; and one dead at Eccup on November 16th.

224. Razorbill (496).

227. Guillemot (498/9).

230. Puffin (503).—During the two hours of April 19th when *c.* 27,000 Kittiwakes moved north at Flamborough these species also passed to the number of *c.* 350-400. Guillemots being in the majority (E.E.J.). They bred normally.

232. Stock-Dove (381).—More than 100 were in one field near Bottomboat on October 27th (E.G.). Only recorded at Spurn on July 29th, September 30th, and November 26th.

234. Wood-Pigeon (380).—At Spurn *c.* 400 passed south, 7-30 to 9 a.m. on February 9th; otherwise records occasional and numbers few. Fields near Fairburn showed *c.* 1,500 on January 13th (W.C.W.); and *c.* 1,000 on December 15th (R.F.D.). The roosting flock at Hornsea Mere on December 27th was estimated at over *c.* 10,000 birds (G.R.B.). Crops of two birds shot on February 22nd contained clover and holly berries respectively (P.Y.).

235. Turtle Dove (383).—First reported at Ossett S.F. on May 1st (A.F.); and last at Fairburn on October 19th (W.C.W., C.W.). Scarce about Thornton-le-Dale (R.M.G.); but several pairs in conifers in Cropton Forest, Rosedale, on May 31st (D.R. & P.S.). At Spurn occurred June 8th to 14th. Fewer than usual generally.

237. Cuckoo (240).—Several people and societies have thought Cuckoos were much fewer than usual this year. Are insecticides and weed-killers affecting birds much? First noted on April 3rd at Knaresborough (I.D.), and on the 18th at Ossett (G.C.); last at Wath Ings on September 8th (R.J.R.). Maxima at Spurn: ten June 9th, nine July 26th.

241. Barn Owl (254).—A 'pull' ringed Nunwick, near Ripon, 26/7/55; dead in barn, Bishopthorpe, York, 26/2/57 (M.R.S., A.F.G.W.). From various reports seems to have held its status.

246. Little Owl (249).—Noted in new localities about Eskdale (J.L.); and *c.* two miles west of Settle on December 23rd (K.G.S., D.S.S.).

247. Tawny Owl (253).—Nested in a barn near Harrogate and on May 6th the nest held one well-grown owlet, a leveret, and a mole (G.H., A.F.G.W.); and nested on straw in Dutch barn at Stanghow, three eggs April 7th (M.A.). In three nests near Ilkley food included two hindquarters of rabbit, two bank voles, and feathers of Blackbird (D.B.I.).

248. Long-eared Owl (250).—Ringed on passage at Falsterbo, S. Sweden, 19/10/52; dead Selby, Yorks., 16/3/56 (from *Vår Fågelvärld*, per H.O.B.). R. G. Hawley reports absence of species in summer from wood where wintered; and bred formerly—and back again in late autumn. Several breeding records come from the East and West Ridings. Occurred at Spurn on March 2nd and November 16th; where several owls were recorded as of this species or the next.

249. Short-eared Owl (251).—Breeding proved in at least six places in the North and West Ridings, and birds seen at other places. Ten (out of ten) were shot during a grouse shoot above Nidderdale—when a vole plague which no doubt had attracted the birds was at its height! After a pair had been shot, three of their chicks were rescued, reared, and released (A.F.G.W., M.R.S., and others). Recorded on many days at Spurn from January to April and from July 14th to the year end; and similarly up to May 15th and from July 29th in the lower Humber (H.O.B. and others).

252. Nightjar (227).—Ringed pull near Ripon, 2/7/57; dead near Tadcaster, 2/11/57 (R.C.). The B.T.O. enquiry stimulated search for new localities. Nightjars were heard in two areas of V.C. 61, in three areas of V.C. 62, in three areas of V.C. 63, in at least ten areas of V.C. 64, and in two areas of V.C. 65. Breeding was proved in Nidderdale (A.F.G.W.), Wharfedale (E.S.S.), Ripon (R.C.), and Hemsworth (M.N.R.) areas. First heard May 31st in Nidderdale (M.R.S.) and last on August 22nd (Miss M.W.); but seen at Hemsworth in Dr. Rankin's garden on October 15th; and see ringed bird above.

255. Swift (225).—First recorded on April 27th: one near Broomhill Flash, Wombwell (F.H.), and one at Harewood (R.V.J.). Not seen in the Bradford area until May 11th (D.F.W.) (or at Spurn); and at Sleights until May 16th (T. W. A. Wood). Occurred at Spurn on most days in September until the 22nd; with the last on the 29th; at Cherry Cobb (H.O.B.) and Aldburgh (M.K.T.) on the 21st. Other really late dates are: Bottomboat (E.G.) and Gouthwaite (M.R.S., A.F.G.W.) on September 22nd; near Huddersfield (A.N.S.) and near Doncaster (E.L.) on the 23rd; one at Fairburn on the 28th (G. & E.G.); and one hawking over the Crag at Knaresborough on October 21st (W. H. Jowsey).

Records of concentrations and movements seem disjointed. Heavy passage south at Spurn on July 1st, 13th (*c.* 1,500), 14th, and August 10th; and southward at South Gare on July 7th (D.R. & P.S.). 700-800 Fairburn July 10th (J.D.P.), and *c.* 2,000 August 25th (C.W.); Bottomboat, *c.* 500 July 26th, *c.* 600 on 27th

(C.W.). On July 21st the air was black with feeding Swifts over Fly Flatts Reservoir, 'too many to count' (C.R.S.).

258. Kingfisher (234).—Status and distribution normal.

261. Hoopoe (232).—Occurred at Patrington Haven on April 21st (L.S., H.O.B.); and on the lawn at Catton Hall, Thirsk, on October 4th (Miss C. M. Rob); and near Wakefield, perched on wires on October 17th (R.H.).

262. Green Woodpecker (235).—Status and distribution unchanged.

263. Great-Spotted Woodpecker (236/7).—Occurred at Spurn August 3rd, 11th and 31st, and September 7th, 9th and 28th, and October 7th. One flew south along Hornsea cliff-top on October 27th (M.K.T.). Remains the most plentiful of the woodpeckers in Yorkshire.

264. Lesser-Spotted Woodpecker (238).—Occurred Rudland on January 20th and in Bransdale on November 3rd (T.E.D.), in Kildale Woods on December 8th (B.J.C., J.H.), near Scarborough on April 21st (A.J.W.), Hornby Park on October 20th (G.R.P.), near Leathley on November 9th (P.S.), at Ripley on June 10th (I.D.), Baildon on April 20th (W.G.), Thornhill on July 14th (W.C.W.), and Blubberhouses on July 28th (E.S.S.). Proved to breed at Harewood (G.R.N., M.D.), and in Roundhay Park (R.V.J.).

265. Wryneck (239).—Occurred at Spurn, one on April 28th (T.E.D., P.H.S., G.H.A.) and one on September 21st (R.F.D.). Ringed Spurn, 4/9/56; Kraddsele, near Sorsele, Västerbotten, Sweden, 27/5/57.

271. Woodlark (69).—Bred in two Ridings. One sang above Bilsdale on May 30th and June 13th (P.A.R.). Heard in three East Riding areas. Occurred near Haxby on October 12th, and at Alne on the 19th (F.J.); and at Spurn on March 24th (K.S., J.C., T.K., B.S.P.).

272. Skylark (70).—One on April 30th on the high slopes opposite Buckden was the only one seen in a week in that part of Wharfedale (F.W.B.). Skylarks bulked large in the counts of *passeres* passing south at Spurn during October, with maxima of *c.* 1,850 on the 12th and *c.* 1,200 on the 19th. There was coastal passage north-west near Redcar also from October 3rd to 13th (D.R. & P.S.); and 'very many' were in fields near Blackmoorfoot Reservoir on October 6th (R.Cr.). Results from the same movements showed at Fairburn—many passing south-west on the 20th, when a count on one section of the wide front gave 344 from dawn to 9-30 a.m. (W.C.W.). Skylarks were coming off the sea at Redcar on November 2nd and 3rd (D.R. & P.S.), which was the last period of notable Skylark passage at Spurn.

273. Shorelark (72).—One occurred at Spurn on October 26th and on November 24th (R.F.D. and others). A. Vittery reported three at South Gare on December 30th (P.J.S.).

274. Swallow (220).—A few odd Swallows 'dared' the winds of March: one in Jackson's Bay, Scarborough, March 15th (T.M.C.); three near Wheldrake, March 17th (B.D.); one Fairburn, March 24th (C.W. & G.W.); two Barnsley on 29th (D.A.); and one each on the 31st at Elland (R.Cr.) and Ripley (A.F.G.W., I. & S.D.). But at Spurn one on April 15th was the first; and in some areas inland the first came later. Maxima at Spurn were on May 11th, *c.* 500 (also a day of activity at Redcar with birds passing both NW and SE) and on September 8th, when *c.* 1,500 passed between 6-45 a.m. and 11-30; and the last considerable passage came on the 19th (*c.* 500). On this last date *c.* 1,700 were at Fairburn, but the peak did not come there until September 24th with *c.* 4,500 (C.W.). On September 21st, 437 were counted from 11 a.m. to 12-15 as they passed at Rodley S.F. (by the Aire) (D.A.R.), and passage continued into afternoon (R.V.J.). On September 29th, several hundreds hawked at Bottomboat (E.G.).

Late Swallows were numerous: five, Easington, October 31st (J.E.S.W.); one, Thorngumbald, November 1st (J.E.S.W.); and two, Huby (Wharfedale) (H.L.S.) on November 2nd; one, Huby, November 9th (H.L.S.); one, Spurn, November 4th; and a belated juvenile at Brompton on November 19th (R.M.G.); and one, Scarborough, November 20th (A.J.W.).

276. House-Martin (222).—The mild weather brought abnormally early House-Martins—much more unusual in March than the Swallow. One occurred at Ripley on March 14th (Miss M.W.); at Fairburn on the 24th (C.W., G.W.); and at Harrogate on the 27th (A.F.G.W.), after which no more appeared in his area until April 23rd, at Gouthwaite. The first at Bracken Bank, Keighley, came on May 8th (J.R.G.); and at Spurn seven on May 11th. The spring peak at Spurn was from June 8th to 13th; and in autumn on September 13th. For House-Martins to linger

into November is not very unusual; such were: seven, Thorngumbald, November 1st (J.E.S.W.); one, Gisburn, November 3rd (J.N.T.); four, Thornton-le-Dale, November 4th, and two on the 5th (R.M.G.); one over Harrogate on November 12th (M.R.S.); and one at Spurn on November 23rd.

277. Sand-Martin (223).—A juvenile ringed Ilkley 23/8/55; Otley, 27/5/57 (Wharfedale N.S.). More than twenty records referred to birds in March, of which the earliest were: one on March 16th at Knaresborough S.F., and five on the 17th (A.F.G.W., M.R.S.); and odd birds at six other places. On March 26th were c. 30 at Castleford Bridge and five at Fairburn (J.D.P.). Two at Spurn on April 15th were the first there. On March 30th c. 120 came to Fairburn at dusk apparently down valley (W.C.W.). Very large numbers came to Fairburn during August, beginning to appear half an hour before dusk, beside which other concentrations seem insignificant; C. Winn estimated numbers on August 7th at c. 600, increasing progressively to c. 13,000 on August 27th; they probably came from river banks in the Dales. The maximum for a day at Spurn was c. 200 on August 17th. Late records were: one at Gouthwaite on September 27th (Miss M.W.), at Fairburn on October 5th (G. & E.G.), and at Spurn on October 20th.

Nest material from a colony at Ben Rhydding contained 47 ♂ and 47 ♀ specimens of the flea *Ceratophyllus styx jordani* Smit, the typical northern form (C. G. Booth).

279. Raven (1).—Three pairs laid eggs, which disappeared from two nests. Ravens seen elsewhere on occasion as: on May 3rd one near Buckden (E.C.S.); and on August 12th one above Colsterdale (P.Y.).

280. Carrion Crow (3).—An all-white crow near Wensley in an elm on September 15th was being hustled by normal crows—the bill was normal and the eye black (G.E.A.). Two of four reared at Knaresborough S.F. had white centres to primaries and secondaries, and smoky-grey body feathers (J.R.M.). One at Thornton-le-Dale on June 29th had a white patch on both wings (R.M.G.). 'The annual shoot of Carrion Crows' began near Sleights on May 25th (T.W.A.W.). *Circa* 40 settled in tree tops at Chevet on April 2nd at 18.15 hours (E.G.). Ringed near Sedbergh, 27/6/54; Stake Fell, near Bainbridge, 16/11/56 (Sedbergh School). *Circa* 40 at Howland Moor on February 23rd fed among newly-burnt heather (T.E.D.). Thirty-eight passed south at Spurn in early morning of March 3rd. Sixty-six were on Sewerby shore on December 29th (H.O.B.).

281. Hooded Crow (2).—Noted mainly on the coast and Humberside. Maxima: 14 at Spurn, March 17th; 11, Patrington Haven, March 31st (H.O.B.). Six coasted north-west at Redcar on April 13th (D.R. & P.S.). Latest: one at Spurn on May 29th (R.M.G.) and the next on October 27th. Eighteen at Sunk Island on December 1st (R. Holmes, A. Vaughan) was the maximum. The farthest west was recorded of a bird about Wath Ings from January 3rd to February 17th, and one at Worsborough on March 3rd (D.A., F.H., J.C.H.L.).

282. Rook (4).—Some were carrying sticks to nests near Masham on September 29th (P.Y.). Members of the Leeds Bird-Watchers Club have been studying flight-lines of this species and the Jackdaw; and their notes should make interesting material for a paper. A line in the summary of findings so far, sent to me by R. V. Jackson, reads: 'that these birds travel anything up to 20-30 miles from their roost to the feeding area seems to be a regular daily event'. *Circa* 5,000 were in fields at Wintersett during January (D.A.).

283. Jackdaw (5).—See above. Status unchanged.

284. Magpie (7).—Two shot near Danby and sent to the Leeds Museum had light cinnamon feathers where they should have been black (A.G.). The species continues to increase where game is not preserved by keepers.

287. Chough (13).—On April 27th, at Hunt Cliff, Saltburn, Harry (13) and Janette (11) Kay Robinson saw a jackdaw-like bird with glossy black plumage and a red bill, which flew along the cliff edge, disappearing below the bulge partway down, and re-appearing above it. Their father, Mr. W. Kay Robinson, tried to find the bird without success. The local people had seen the bird and were sure it was not a Jackdaw. One of them, Mr. J. Thompson, who had last seen it on or about May 22nd, confirmed the story when interviewed by D. R. Seaward.

Titmice.—More occurred at Spurn in autumn, and more were ringed than in all previous years: and at least four species were considered to be more numerous inland than usual. On October 1st the direction of flight of 65 Blue-Tits at Spurn was northward; on the 6th two parties of 17 and 22 turned back northward after going southward to the Point. The figures mainly consist of birds seen in parties

passing south during early morning watches at the Narrow Neck; but on some days small parties wandered about the Peninsula in both directions; and some were seen to make for Lincolnshire. The following table excludes days when numbers of all species were few or none. A country-wide enquiry into the tit-movements of last autumn is being conducted.

TITS ESTIMATED AT SPURN 1957

		<i>Great</i>	<i>Blue</i>	<i>Coal</i>	<i>Long-tailed</i>	<i>Ringed all species</i>
Sept.	16 . . .	8	12	1	—	—
	18 . . .	1	10	3	—	—
Oct.	1 . . .	3	65	13	—	4
	6 . . .	1	50	1	—	6
	7 . . .	5	80	7	—	27
	8 . . .	1	42	6	—	15
	12 . . .	2	19	2	—	—
	15 . . .	1	80	—	—	11
	17 . . .	5	12	30	—	37
	18 . . .	—	12	20	5	—
	19 . . .	40	150	50	—	50
	20 . . .	30	24	1	—	6

Most could not be recognised racially, of all species.

288. Great-Tit (98).—Considered rather more numerous inland than usual; and see above table. Two caught at Spurn on October 17th were considered of the Continental race from bill measurements and shape (J.R.M., G.R.W., J.A.S.B., B.C.P., S.J.W.).

289. Blue-Tit (100).—Two Methuselahs among Blue-Tits were:

Ringed High Royd S.F., 13/11/48; re-trapped 10/11/57 (T.K.).

Ringed Apperley Bridge, 20/11/49 (R.F.D.); re-trapped 10/11/57 and 25/11/57 (E.E.J.).

One ringed Masham, 8/1/57, had wandered ten miles northward to Bolton Hall, Leyburn, by 9/4/57 (E.E.J.).

The main events at Spurn are recorded in the table and the paragraph headed Titmice. At Redcar, D.R. and Mrs. Seaward had remarked on the unusual cleanness of Blue-Tits visiting their garden before October 6th, but only then realised a movement was taking place, when 64 passed through a nearby fox-cover between 7-45 and 8-15 a.m., and some continued to pass through the garden all morning. October 6th was probably the peak day of the movement; but c. 100 tits, mainly Blue, passed through the fox-cover on the 17th in two and one-third hours. Twenty-one passed through the garden before 11 a.m. on October 21st; a few days before which a flock of c. 100 occurred at Zetland Park, Redcar, where parties also occurred among the works. Six were at South Gare on October 27th.

In the Helmsley area Mr. Adam Gordon speaks of a 'great invasion' and of tits picking holes in grain sacks; but in general reports from inland say 'more numerous than usual', with no large movements seen. Forty-one flew west along the Humber bank near North Ferriby between 06.15 and 09.00 hours on October 13th, and 12 flew south over the river (B.S.P.). At Fairburn there were unusual numbers in late October and November. At Sheffield, Blue-Tits were only slightly more numerous and were dirty as usual (D.R.W.). To cite all records is impossible. B. Dale (York) noted that most of his colour-ringed birds left in autumn and that fresh birds took their places, which may have been only local movement.

290. Coal-Tit (102).—It is quite unusual for this species to appear in suburban gardens as at Roundhay in October (R.V.J.) and elsewhere; and in built-up areas as around Doncaster (R.J.R.) and elsewhere. At Redcar, where 'we had not seen one before' after a few had appeared earlier in the month with the other tits, 15 in a party appeared on October 18th (D.R. & P.S.). The position at Spurn is shown in the table; and Coal-Tits have been always rare at Spurn. *Circa* 24 were in bushes near Welton Water on October 27th (B.S.P.). We shall look forward to the report of the 'Tit Enquiry' with much interest. It is understood that larger numbers were concerned in the south.

291. Long-tailed Tit (110/11).—Was generally fairly plentiful in the breeding season; and in the autumn was unusually frequent in some areas. Parties were in the fox-cover near Redcar, and passed through the garden in October, which is

very unusual (D.R. & P.S.). I received no record of a party larger than could be composed of one family; although a party of 17 at Fairburn on November 16th was approaching the limit. Neither has anyone seen a specimen of the White-headed northern race.

292. Marsh-Tit (107).—Apparently 'black-capped tits' were hardly affected by the autumnal movement of tits.

293. Willow-Tit (108).—Occurred at Gouthwaite on February 10th (I. & S.D.); and near Grantley (A.F.G.W.); Hornby Park on September 21st (G.R.P.); near Catterick on October 2nd (G.R.P.). Plentiful at Worsborough (D.A.). Bred Adel (J.A.) and seen building at Coxley (A.F.).

296. Nuthatch (96).—Noted near Buckden in May (F.W.B.); by Coniston Lake on December 17th (J.N.T.); and near Malham Tarn House on May 4th (L. Magee). Bred Hornby Park (G.R.P.); and in the usual areas, where mostly fairly plentiful.

298. Tree-Creeper (93).—One, Spurn, October 1st. Twelve in a party of mixed tits in woods at Leighton on August 27th was unusual (J.R.G.).

299. Wren (213).—Sudden increase to *c.* 20 at Spurn on September 28th of which ten were caught. Twelve were recorded on October 1st after which eight was maximum; one on May 11th was the sole record from April 1st to August 31st south of Kilnsea. Bred plentifully. Numbers wintering in the marsh at Rodley S.F. were remarkable (A.H.B.L.). A white-headed Wren was seen often by the keeper at Lindley (O.M.P.).

301. Mistle-Thrush (174).—*Circa* 35 at Weston, Otley, on March 24th was unusual (P. Swallow). Up to two coasted north-west at Redcar with other species on six dates in October (D.R. & P.S.). Five were at Spurn on October 17th.

302. Fieldfare (173).—*Circa* 300 flew south at Spurn on February 23rd and may have been included in the *c.* 400 feeding in the Point camp area; and parties flew down in the morning of March 1st. After unusual numbers in March the last occurred at Spurn on May 13th; and the first of autumn on September 22nd. There was heavy passage on October 23rd (*c.* 1,300) and 25th (*c.* 800).

Reverting to spring, *c.* 500 fed on grassland at Hollym Carr on May 5th (A.C.); and *c.* 200 near Hedon on the 6th (A.C.). At Old Bramhope species scarce until *c.* 200 on March 29th, and fairly numerous to April 9th, with one on May 7th (T.R.T.). The main autumnal flocks inland occurred from late October to December: *c.* 150 Hornby Lakes, October 20th (G.R.P.); *c.* 200 Shadwell, October 25th (J.R.G.); numerous at Ilton on October 30th and still so on November 13th (P.Y.); large numbers flew west over Roundhay shortly after dawn on November 9th—*c.* 1,650 passed in 40 minutes (R.V.J.); large flocks were at Eccup, November to December (G.R.N.); Miss Sanderson estimated *c.* 600 at Leighton on December 22nd, and *c.* 600 between Richmond and Reeth on the 28th.

303. Song-Thrush (175/7).—Ringed Moniaive, Dumfriesshire, 2/2/56; Well, near Masham, 13/4/56. Ringed as juvenile, Ilkley, 12/6/57; Isle of Man, 30/11/57 (Wharfedale N.S.). Ringed as pull, Gouthwaite, 13/4/57; dead, Ribadesella (Oviedo), N. Spain, 11/11/57 (M.R.S., A.F.G.W.). Ringed Spurn, 14/10/56; Old Leake, Boston, Lincs. (20/4/57). Fifteen nests of Song-Thrush and Blackbird were found about Gouthwaite on March 31st; one of this species containing day-old young (A.F.G.W.), results of the mild winter, with Song-Thrushes in upper Nidderdale a month earlier than usual (D.S.). No large numbers passed at Spurn.

304. Redwing (178/9).—Birds were passing over Redcar in the calm moonlit night of March 16th (D.R. & P.S.). Last seen Spurn, one on May 1st; and inland, one near Masham on April 15th (E.E.J.). The autumnal first was at Spurn on August 31st (C.E.A.); with no more until seven on September 28th and *c.* 150 seen coming off the sea on the 30th. Other days of maxima were *c.* 100 October 15th; *c.* 225 October 23rd; *c.* 250 October 25th; and *c.* 300 November 4th. At South Gare, Redwing were coming off the sea exhausted on October 20th (D.R. & P.S.); and *c.* 250 came from north-east to the coast north of Saltburn on October 15th (M. C. Adams). Heard over Huddersfield in the night of October 7th and often afterwards (R.Cr.); and over Leeds at 21.30 hours on the 16th (A.H.B.L.); and over Hull at 19.00 and 22.00 hours on October 30th (B.S.P., H.O.B.). At Roundhay, just after dawn on November 9th, *c.* 495 Redwings flew west with larger numbers of Fieldfares (R.V.J.). At 3-45 p.m. on November 30th, T. D. Bisiker watched *c.* 650 fly south at Bretton, severe frosts followed for a few days.

307. Ring-Ousel (182).—Ringed as pull, Beamsley Moor, near Ilkley, 19/5/57; Vergava, near San Sebastian, Spain, 20/10/57 (E.S.S.). Was well distributed in the

breeding season, including several north-eastern areas. Early dates were March 17th, Howgill Fells (S.S.S.); March 18th, near Great Ayton (D.R. & P.S.); March 22nd, Ilton (P.Y.); March 23rd, Ilkley (E.S.S.) and Farndale (T.E.D.). Occurred at Spurn on March 31st (two), April 6th and 16th and May 1st; and from September 20th to 23rd (five on the 21st) and one on the 29th. Ring-Ousels at High Royd on May 11th (T.K.); and at Rodley S.F. on September 21st (D.A.R.) were no doubt on passage.

308. Blackbird (184).—

Ringed Spurn, ♀, 15/9/57; Hull, 6/11/57.

Ringed Spurn, ♂, 4/11/56; Ockelbo (Gavelborg), Sweden, 13/4/57.

Ringed Spurn, ad., 24/3/56; Vosselaar (Antwerp), Belgium, 28/4/57.

Ringed Spurn, 17/10/54; near Sauherad (Telemark), Norway, 20/3/57.

Ringed Spurn, ♀, 31/10/56; Grimsby, Lincs., 3/3/57.

Ringed Spurn, 6/11/54; Kilworth, Co. Cork, Eire, 22/3/57.

Ringed Spurn, ♀, 1/11/55; near Hauge, Sogndal, Rogaland, Norway, 17/1/57.

Ringed Spurn, ♀, 17/11/56; Cranswick, Driffield, Yorks., 10/2/57.

At a roost in Hookstone Wood, Harrogate, 101 were ringed between October 31st and December 29th (M.R.S.).

Spring maximum at Spurn, *c.* 35 on March 10th. Autumn maxima: *c.* 180 on October 8th; *c.* 150 on October 25th and 31st. On October 27th *c.* 30 males were in one field near North Ferriby (B.S.P.); and numbers increased in other areas in the autumn as the result of immigration. A Blackbird ringed in 1950 at Ben Rhydding by the Wharfedale N.S. was re-caught and released in December 1957 (W.F.F.).

311. Wheatear (186).—Unprecedentedly there were 45 records of Wheatears in March, the earliest being at Fairburn on March 3rd (C.E.A.); and the next three on the 11th at Heptonstall (E. S. Baines, per I.M.), near Wath (Nidderdale) (D. G. Leonard); and at Stanghow, near Loftus (M.A.), after which records were daily. On March 23rd, 12 were at Spurn (J.C.), which figure was reached on several later spring days. Wheatears were at Spurn from July 26th daily, maximum 22 on August 17th, until September 20th, when a moderate wind from east drifted Spurnwards up to *c.* 200 Wheatears (and some Redstarts and other species). Some Wheatears were seen coming off the sea. Forty-three were at Flamborough on the 21st (A. J. Williams); when also were many at Redcar and South Gare (D.R. & P.S.). Numbers remained large at Spurn for a few days; then gradually fell to single birds, October 9th to 16th; and a belated straggler on November 3rd.

Two at Gorpole Reservoir on May 5th were considered to be 'Greenlanders' (V.S.C., I.M.). Bred in the Wolds, four pairs being located near Millington on June 10th, two of them feeding fledglings (H.O.B.); and in the Pennines and other habitats.

One ringed Spurn, 7/9/56; Zaragoza, Spain, 8/9/57—the first reward for 118 Wheatears ringed.

317. Stonechat (198).—Occurred at Ben Rhydding on March 9th (R.C.P., E.A.W.G.). A bird near Hawes on July 14th was interesting (G.R.N., M.D.). Noted at Hangthwaite on October 5th (R.J.R.); and at Newton Ing and Winterset (C.W., F.H.). Up to three were at Spurn until March 4th, one on April 28th, and up to six on most days from September 16th. Two were on Filey Cliff on December 1st (A.J.W.); and two on the shore near Bridlington on December 14th (B.D.); also occurred on various dates from October to December at Withernsea, Patrington and Hornsea; and one at Welton Water on October 13th (B.S.P.).

318. Whinchat (197).—Occurred at Hangthwaite on April 22nd (R.J.R.); and at Spurn on April 28th, where began to pass again from August 3rd to October 8th, with maximum of *c.* 20 on September 21st, when several were at South Gare, and three at Flamborough. One was seen at Marley, Airedale, on October 18th (S.L.). At Hangthwaite, 11 were in a party on September 5th (R.J.R.).

320. Redstart (201).—The earliest were: one, Masham, April 10th (E.E.J.), two, Spurn, April 17th; one, Ripley, April 18th, and five on the 20th (A.F.G.W.). After the autumnal first at Spurn on August 21st, occurrences were few until the easterly drift of September 20th to 22nd operated, with *c.* 30 on the 20th, *c.* 150 on the 21st, and *c.* 120 on the 22nd and 23rd; after which numbers fell rapidly, with the last on October 10th. Several were at Redcar and South Gare, September 21st to 22nd (D.R. & P.S.); and eight were at Flamborough on the 22nd and a few until the 25th (A.J. Williams).

321. Black Redstart (202).—Five at Spurn on March 23rd included a handsome male (J.C., K.S., T.K.); the last was seen on March 31st. Single birds on September 22nd and 23rd, on October 5th, and November 17th to 23rd were all at Spurn in the autumn. The species was seen on the bridge at Dowley Gap on November 2nd (S.L.); and on a garden wall at Nab Wood, Bradford, on November 14th (J.K.F.). A Redstart not seen in detail in the Lodge Moor area of Sheffield on March 14th was presumed to be of this species (A.H.V.S.).

322. Nightingale (203).—Single birds were at Spurn on April 21st (seen); and on May 11th (heard) (J.C., C.W.). [Claimed as probably bred at Harewood; pair seen June 22nd, 'the rusty rump and tail stood out very well'; on July 4th heard a 'sort of sub-song'; and on July 28th a young bird seen 'very like Robin', had a few greyish-white spots, and rump and tail rusty (G.R.N., M.D.).] One sang fully at Allerthorpe on May 14th (O. N. Wallis).

324. Bluethroat (205).—The tail end only was seen of a bird flushed twice on September 21st at Spurn, 'the distinctive red tail flashes' were seen (D.R.W.).

325. Robin (207/8).—One ringed Spurn, 9/10/56; dead, Wickersley, near Rotherham, 20/2/57. One ringed, as adult, Ilkley, 2/5/52; dead where ringed, 14/10/57—must have been six years old.

Spring passage at Spurn, maximum eight on March 23rd; in autumn *c.* 50 on September 21st. There had been a sudden increase at Redcar, September 19th-20th, and one was at South Gare on the 21st. A road casualty at Spurn on September 21st was 'an undoubted continental, and small like those of the great ru h of 1951' (A. Hazelwood). *Circa* 15 were at Fairburn on October 18th (W.C.W.).

327. Grasshopper Warbler (145).—First noted on April 22nd at Sprotborough (J.B.H., G.F.K.); and on the 23rd at Harewood (G.R.N., M.D.), on which latter date one sang at Spurn, and one on May 10th, the only two recorded at Spurn for the year. Inland was reported more frequently than usual, with breeding probable near Middlesbrough and in the North-East, near Ripon, near Harewood, in South Yorkshire and west of Sheffield, certainly near York, and elsewhere; with two or more pairs at several places. Last noted at Rodley S.F. on August 26th (D.B.I.). One was at South Gare on September 21st (D.R.S.).

333. Reed-Warbler (149).—First recorded on May 1st at Hangthwaite (R.J.R.). Only one at Spurn, on October 6th. Bred in the usual colonies.

337. Sedge-Warbler (153).—Redcar was a curious place for first to appear on April 18th (D.R. & P.S.). Only appeared as single birds on a few spring days at Spurn with no probability of breeding; ten recorded on August 21st and six on September 8th were the peaks of a very slight passage.

343. Blackcap (162).—One sang at Brotherton on March 30th (W.C.W.), and one at Knaresborough on April 7th (M.R.S., A.F.G.W.); and one at Ripon S.F. on the 12th (R.C.). One had been at a Harrogate bird table on February 24th and 25th in hard weather (Mrs. K. M. Birkby). A hen came to a Leeds bird table on January 19th with food, mainly brown bread crumbs (D. Carter, S. J. Wells, per J.A.). At Spurn, in spring, only recorded on April 15th and 21st; but in autumn on several days from September 10th (five on September 21st); and single birds on four days in November and on December 1st.

344. Barred Warbler (159). Recorded at Spurn on September 8th, 9th and on the 13th.

346. Garden-Warbler (161).—One sang by the Ure below Grewelthorpe on April 21st (E.E.J.). Spring dates at Spurn were May 9th, 26th and June 8th; but was recorded on many dates from August 5th, with 12 as maximum on September 21st and the last on October 5th.

347. Whitethroat (163).—Seven caught at Spurn in 1957 had been ringed in 1956; and one at Knaresborough S.F. on 28/7/57 had been ringed there as a 'pull' on 22/6/55 (J.R.M.). A Whitethroat in Adel Woods on April 11th was the earliest (M.D.). Recorded at Spurn from April 22nd, with maxima of 35 on May 26th and *c.* 20 on several days in August, and the last on October 6th. One was at Rodley S.F. on September 29th (A.H.B.L.).

348. Lesser Whitethroat (164).—At Spurn in spring were five on May 8th (four were caught); and ones on May 11th and 26th. There was slight passage September 20th to 24th and one on October 4th. One caught at Spurn on 26/5/57 had been ringed 19/8/56. One was at Swillington Ing on April 26th. The species generally was scarcer than usual. A few were noted around Harrogate.

354. Willow-Warbler (132).—Ringed Ilkley as juvenile* 7/8/55, recovered where ringed 15/5/57 (Wharfedale N.S.). One ringed Spurn 10/6/56 was recaptured May 12th and 20th, 1957. One ringed at Knaresborough S.F. 22/5/56 was retrapped 11/5/57 (J.R.M.).

Occurred first at Spurn, one singing in Beacon Lane on March 29th (K.S.). Others unusually early were: April 2nd, two at Keighley (J.R.G.); April 4th, two at Cliffe Wood (E.B.B.); and singles at Ripley and near Harrogate (M.R.S., A.F.G.W.); and others for some days later. Nevertheless, April 22nd was the date of the main passage at Fairburn. At Spurn, April 16th to 17th and May 10th to 12th were the periods when most occurred in spring. Maxima in autumn at Spurn were *c.* 20 August 21st; *c.* 15 September 26th; with the last on October 10th. Two Willow-Warblers were in Roundhay Park, Leeds, on November 9th—one caught was a bird of the year (R.V.J.).

355. Greenish Warbler (134).—A phylloscopine warbler caught at the Chalk-Bank-North Trap, Spurn, on April 20th by J.K. and Mrs. Fenton and A. Archer was chaff-like, with dark legs, but had a single conspicuous wing-bar. Whilst being taken to the Cottage in a gathering cage for detailed examination, and inspection by others present, the bird escaped. It was considered to be Greenish Warbler rather than Arctic Warbler in view of the dark legs.

356. Chiffchaff (129).—March 17th at Chevet Wood (E.G.), March 21st at Spenborough S.F. (W.C.W.), March 23rd at Bretton Park (J.C.S.E.), and March 24th at seven places were the earliest inland records. Three were at Spurn on March 23rd; and but for one on the 24th were all of spring. Appeared there again on September 13th and, after 36 days void, on November 9th (two), with one on several days in late November to the 27th. Sang in a number of places inland from September 4th to 17th (near Beverley, E.B.B.). Occurred on December 1st at Winterset (J.C.), and Esholt (E.E.J.); and one about a garden in Knaresborough from December 4th to 24th was caught on December 19th and from plumage thought to be 'probably of the British race' (S. & I.D., A.F.G.W.). Absent from some of its usual haunts (E.W.T.); and to be in reduced numbers at others.

357. Wood-Warbler (135).—Three at Bolton Abbey Woods on April 10th were the first. One was at Spurn on April 17th—the only one of the year.

364. Goldcrest (126/7).—Recorded at Spurn from March 10th (six) intermittently to April 13th—11 March 23rd, ten March 31st. A few were about Redcar March 22nd-23rd; and one on April 12th (D.R. & P.S.).

One appeared at Spurn on August 22nd and thence maxima were 13 and 15 on September 16th and 17th, *c.* 50 on September 30th, and 12 on October 2nd, 14th and November 16th, with *c.* 20 on the 21st—the last. The species were numerous at Flamborough on September 14th and 15th (H.O.B.); and one or two were about Redcar on September 26th, October 1st and 29th (D.R. & P.S.).

Noted inland away from breeding areas inland on September 2nd, Rodley S.F. (D.B.I.); September 10th, Hangthwaite (R.J.R.); Seacroft, *c.* six on 14th (R.F.D.); near Horsforth by river on the 29th (A.H.B.L.); Chevet on October 13th, increase noted (G.C.); and on October 15th and 20th at Fairburn (W.C.W.).

[365. Firecrest (128).—A bird, possibly of this species, was seen at close range by J. Ogden at Hope Hill Farm, Baildon, on March 23rd.]

366. Spotted Flycatcher (126/7).—One ringed as pull near Knaresborough, 27/7/57; Cordoba, S. Spain, 2/10/57 (M.R.S., A.F.G.W.). One was back at Drighlington on May 6th and two on the 8th (D.A.R.), which was early. Generally the species was late and numbers depleted, many sites being without their usual pairs. More families were in evidence in July and August than had been expected. Seen at Spurn on May 19th and 26th, and from June 8th to 14th; and in autumn almost confined to September 20th to 24th, with maximum of six—one on October 4th was the last. Fairburn had 11 on August 14th (D.J.R-P., W.C.W.), and at least 15 on September 21st (C.W., B.H.); one was at Barnoldswick on September 28th (J.N.T.) and one on the 29th at Gouthwaite (A.F.G.W.).

368. Pied Flycatcher (123).—First noticed on April 17th in Hackfall Woods (E.E.J.). Fewer than usual at Ripley (A.F.G.W.), more than usual in Bransdale (T.E.D.), together represent the general status. Bred in Roundhay Park, Leeds (R.V.J.). The only spring record at Spurn was *c.* six on April 29th; but began to appear again on August 9th; and after being absent in September until the 17th, reached a maximum of *c.* 40 on the 21st; and was last seen on October 4th. Was present at Flamborough, September 20th to 22nd (six on the 21st, A. J. Williams);

at Redcar on August 19th, and September 21st and 22nd (four) (D.R. & P.S.). Last seen inland, Ripley, on August 21st (G.H.) and one at Rodley S.F. on August 28th (D.A.R.).

370. Red-breasted Flycatcher (125).—A male bird with red throat, and a Pied Flycatcher, appeared together to G.H.A. and R.C. on wires near the Warren trap, Spurn, on August 29th. [Friends summoned E. C. J. Swabey to see a bird near Huddersfield on October 12th. It was described as robin-like, with pink throat and breast, and having a dark tail with white patches on either side of base, and it hawked for flies from a tree-stump. Unfortunately, the bird had gone when Mr. Swabey arrived.]

371. Hedge-Sparrow (210/11).—Several observers speak of unusual numbers in September: in some Doncaster areas; and at Rodley S.F.; and at Redcar on or before October 6th where some flew over high and a flock of six was seen (D.R. & P.S.). Numbers were average at Spurn. From July 19th to October 14th I trapped 52 in my garden; only a few were present at any one time (R.C.).

373. Meadow-Pipit (76).—Ringed Spurn, 1/7/57; Elgoibar (Guipuzcoa), Spain, 43° 12' N., 2° 24' E., 2/9/57. One ringed Spurn, 14/9/55, was recaptured 25/4/57.

On the Spurn peninsula, spring passage of pipits is always far less noticeable than in autumn: at Redcar more pass in spring than were noticed in autumn. Spurn showed more than *c.* 40 on one spring day only, May 7th, when *c.* 150 were recorded north of Kilsea (D.J.R.P.). At Redcar was much passage north-west on many days in March and April with peaks from March 15th to 21st, and April 10th and 12th to 16th; and visits to Staithes and Boulby showed pipits coasting N-W there on April 14th (D.R. & P.S.). Whether the 'hundreds' at Esholt, Bingley, Shipley Glen, etc., on March 21st to 24th would disperse in England, or join the northward coastal procession, cannot be surmised. Meadow-Pipits were well distributed on Ilton Moors on March 22nd (P.Y.), the first having arrived on the 17th.

Pipits passed at Spurn as usual in autumn, mostly before 9-30 a.m. with maxima noted of *c.* 400 on September 6th, *c.* 1,000 on 13th, *c.* 525 on October 2nd, *c.* 400 on October 20th. They were numerous at Flamborough on September 14th and 15th (H.O.B.); many were at South Gare on September 21st (D.R. & P.S.). Passage over Doncaster was greatest on September 19th and 24th (R.J.R.). Fields near South Crosland showed large numbers on October 6th (R.Cr.).

374. Richard's Pipit (73).—On November 10th a bird showed its long legs to J. Cudworth who recognised its call immediately from his last year's experience; it was seen on most days to December 8th by many people and may possibly have been the same bird again.

376. Tree-Pipit (75).—One was at Grassington on April 14th (R.F.D.); and at Chevet on the 16th (E.G.). Occurred at Spurn, April 22nd and 27th; and on August 31st, September 8th and 22nd/23rd.

[378. Red-throated Pipit (77).—A pipit flushed south of the Spurn Chalk Bank on November 16th, which gave a single call 'zee' or 'zeet' repeated two or three times, is included under this heading because it was so first called. A pipit seen on November 30th by several observers was most probably the same bird, proved very difficult to observe; and so far as they were seen 'details of plumage, notes, and behaviour do not fit any pipit in *The Handbook*.'

379. Rock-Pipit (81).—Occurred at Spurn on some days in January to April 6th; and on many days in autumn, maximum ten on October 21st and 23rd. Six were at Cherry Cobb on March 9th (R.J.R., J.B.H.). A few coasted north-west at Redcar on October 8th; and a few about the beach until November 10th (D.R. & P.S.).

380. Pied/White Wagtail (90/91).—White Wagtails were recorded on fifteen dates from March 19th to May 5th in various places. Concentrations of Pied Wagtails include *c.* 55, Esholt, on February 24th (L.M.); *c.* 40, Elland S.F., March 2nd (T.D.B.); *c.* 120, Ossett Spa S.F., August 19th (G.C.); *c.* 45, Lindley Reservoir, August 22nd (P.S.); *c.* 120, Airedale S. Works, November 2nd (C.W.); and *c.* 100, Fryston S.F., December 26th (W.C.W.). Spurn passage, October 2nd to 6th, maximum six.

381. Grey Wagtail (89).—A few coasted north-west at Redcar early on eight mornings March 8th to 22nd (D.R. & P.S.); and a few passed in September. Occurred Spurn, March 16th, June 29th, August 31st; and up to two on a number of dates to October 25th. Noted in late autumn and in winter on the Humberside,

at Wath Ings; and other areas in west and south Yorkshire. Bred rather sparsely in usual areas.

382. Yellow Wagtail (88).—Ringed High Royd July 28th, 1954; recovered Murtosa (Beira Litoral), Portugal, September 30th, 1957 (T.K.). Remarkably early were: one at Filey March 27th (J.E.S.W.), one Fairburn April 3rd (A.F.), one Barnoldswick April 4th (A.P.), one Knaresborough S.F. April 6th (J.R.M.) and one Bubwith April 7th (S.M.). Roosting in the marsh at Gouthwaite were *c.* 100 on May 7th and *c.* 150 on the 11th (A.F.G.W.).—bred commonly in Nidderdale. Some of *c.* 80 at Fairburn on August 14th were seen to struggle against heavy southerly squalls and rain before dropping (D.R.P.). At Redcar a thin trickle coasted north-west April 27th to May 10th; and a few coasted south-east, mid-July to August when other species flew north-west (D.R. & P.S.). At Spurn a few appeared from April 19th to 25th, and five on May 4th, two on May 12th; and began to reappear on July 1st, with unusual passage of up to 36 in a day from August 17th to 21st. Late birds were at: Spurn, October 7th; Fairburn, October 11th (W.C.W.); two at N. Ferriby flying west on October 13th (B.S.P.); and one at Carleton on October 19th (J.D.P.). A 'Blue-headed' was at Wath Ings on April 22nd (J.C.H.L.); and a 'Wheatear-grey' headed at Gouthwaite on April 27th with a whitish eye stripe and creamy-white breast (M.R.S., A.F.G.W.).

383. Waxwing (120).—In the early months recorded on several days in Middlesbrough—73 on February 27th (P.J.S., D. Moon); and on several days at Spurn—17 on February 19th (G.R.E.); and a few at Scarborough, Hessle, Keyingham, Rudland, near York, and one, the last, on April 15th at Hull (M.W.). From early November (9th, Ogden (G.R.E.)) appeared in small numbers in many places in the East Riding and in the North-East, and a few near Bingley, Eccup, Malton, Ogden near Halifax, and Harrogate, with *c.* 30 at Bishop Wilton (T. Robinson), and *c.* 35 at Pickering, as the largest parties reported to me. Berries were scarce which may have been the cause of the small flocks and the widespread distribution; cotoneaster berries were reported as food in several places; and at Pickering privet berries were eaten.

384. Great Grey Shrike (114).—Occurred at Harrogate on January 17th to 21st (I.D., M.R.S., A.F.G.W.); and at Gouthwaite on December 21st (A.F.G.W.). Single birds were at Spurn on November 9th and on December 20th, 21st and 23rd.

388. Red-backed Shrike (119).—One was at *c.* 700 feet altitude at Stanghow, near Skelton, on August 3rd (D. Summers-Smith). Occurred at Spurn, one on April 27th (C.W., P.H.S., A.H.B.L.). A juvenile was near Skeffling on October 5th (J.C., E.S.S.).

389. Starling (14).—

Ringed, Seahouses, Northumberland, 18/9/55; near Huddersfield, 26/10/56.

Ringed Ilkley, 25/4/55; Longford, Eire, 3/12/56 (Wharfedale N.S.).

Ringed Ossett, 27/10/56; Rossington, 31/3/57 (G.C.).

Ringed Thornaby-on-Tees, 3/3/57; near Augustow, Poland, 24/4/57 (P.A.R.).

Ringed Thornaby-on-Tees, 25/2/55; near Smolensk, Russia, 10/8/56 (P.A.R.).

Ringed Thornaby-on-Tees, 3/10/53; Darwen, Lancs., 30/12/55 and 23/6/57, dead (P.A.R.).

Ringed Thornaby-on-Tees, 31/1/56; Braniewo (Olsztyn), Poland, 20/6/57 (P.A.R.).

Ringed Thornaby-on-Tees, 2/11/53; Bedale (21m. SW), 26/2/56 (P.A.R.).

Ringed Heaton, near Bradford, 12/6/49; dead near Bradford, 9/2/57 (R.F.D., P.C.Q.).

Ringed Knaresborough S.F., 26/9/54; Newbould, near Chesterfield, 13/6/57 (J.R.M.).

Ringed Spurn, 20/11/54; near Ketrzyn (Olsztyn), Poland, 54° 45' N., 21° 24' E., 20/1/58.

One starling with upper mandible, one with lower, and one with both mandibles longer than normal have occurred.

A large roost in willows on an island in the Ouse at Howden Dyke (B.S.P.); and a probably much larger one near Bawtry (A.E.P., J.B.), have been located—estimates of numbers in the latter exceeded one million birds. A third roost in the Boroughbridge area is probable—the horde took five minutes to fly over a road on a 50 yards front (R.H.). Fog affected the flight lines of Starlings coming from roosts noticeably at Spurn during March.

391. Hawfinch (18).—Bred near Great Ayton (P.J.S.); and at Bolton Abbey (P.C.Q., D.L.R.); and noted in other usual areas.

392. Greenfinch (19).—Ringed Spurn, 17/3/57; Cleethorpes, 7/6/57. A winter roost at Harewood includes *c.* 550 birds (R.V.J.). Heavy passage south observed at the Narrow Neck, Spurn, in mornings, included Greenfinches—*c.* 385 October 7th; *c.* 900 October 20th; *c.* 600 October 25th and 26th; 883 on the 27th; and *c.* 550 on November 2nd. Numbers were few before and after those dates. Movement north-west at Redcar took place on dates from October 6th to November 2nd—'difficult to separate from local flocks' (D.R. & P.S.). *Circa* 132 flew west near North Ferriby, 06.30–09.30 hours on October 13th (B.S.P.).

393. Goldfinch (20).—Seen frequently at Spurn, numbers greatest during the period of Greenfinch passage above; and *c.* 30 on December 21st. Also at Redcar some passed north-west, 11 on October 17th (D.R. & P.S.). Breeding pairs and winter flocks normal.

394. Siskin (21).—Occurred at Spurn more frequently than usual from September 11th onward; maxima *c.* 30 on September 12th (E.E.J.) and *c.* 27 on October 18th (J.R.M. and others). Parties were not infrequent inland January to March, and September to the year end. Nine were at Ilton on May 5th (P.Y.); two at Lastingham on June 1st (D.R. & P.S.), on which date a cock sang in Bastow Wood (J.C.L.).

395. Linnet (30).—Ringed Spurn, 27/4/55; dead near Biarritz (Basses Pyrenees), France, *c.* 4/12/57. Large flocks of Linnets in early morning and in late afternoon may be dispersing from or coming towards roosts. This applies to large movements inland (as *c.* 500 Harewood in late afternoon of April 7th (A.H.B.L.), on the Humber bank near North Ferriby (753 flying west in three hours early morning of October 13th (B.S.P.); or, on the coast at Redcar and Spurn on most mornings from September 28th to end October—maximum 1,680 on October 7th.

396. Twite (28/29).—Bred near Halifax in three areas, one little colony being new (B.A., E.C.J.S., I.M., R.Cr.); and possibly near where seen in summer in other areas (Haworth, Ilton, etc.). Two were at Bempton on April 19th (E.E.J.); and one at Grimworth Reservoir on November 24th (K.C.C.). Not noticed at Spurn.

397. Redpoll (23/25).—Flocks occurred inland in many places. The largest parties recorded were: *c.* 150 at Fairburn on October 20th had gone a week later (W.C.W.); and *c.* 300 near Marr (Doncaster) on December 30th (A.E.P.). There was a great influx into the York area from mid-October—one 'Mealy' Redpoll noted (F.J.). Bred as usual in odd pairs and little colonies in many places.

401. Bullfinch (32/3).—In no year before have I received so many notes about Bullfinches, or seen so many in the North Riding myself. In many areas the results of a good breeding season were evident in late summer. Harrogate Pinewoods had a flock of *c.* 30 from mid-November; and parties have occurred elsewhere.

404. Crossbill (36).—Present in at least nine areas in the early months up to June; breeding being strongly suspected in several without a nest found. They were: Stanghow-Lockwood Beck area—*c.* 60 March 24th, and eight juveniles + 25 adults on June 10th (M.A., P.J.S.); Lastingham-Rudland-Fadmoor area—up to 16 May 25th to June 15th and *c.* 40 June 22nd (T.E.D., D.R. & P.S.); Ilton area—*c.* 26 January 18th, *c.* 20 May 9th (P.Y.); Middlesmoor area—four February 10th, two males March 3rd, pair with male singing May 4th (I.D., D.S., A.F.G.W.); Bolton Abbey—the female of a pair was carrying nest material on April 21st (D.L.R.); Grass Woods area—April 14th pair seen, female feeding one juvenile, later pair seen with three juveniles (D.F.W.), and six seen May 24th (K.C.C.); Barnsley area—pair and four juveniles seen June 30th and later a flock of 20 (D.A., A.A.); west of Sheffield areas—an adult pair on May 12th (H.A.H.); and a pair in Ecclesall Woods reported in April (D.R.W.); Strines area—five on March 31st (D.R.W.). Birds were seen in all these areas on other dates.

Reported in Lower Swaledale in October (J.P.U.); and possibly at Eccup on November 30th (G.R.N.).

407. Chaffinch (40/41).—Ringed Spurn, 30/3/56; came on a fishing boat and was fed and released '70 m. north of Zeebrugge = 60 m. east of Southwold (*c.* 52° 20' N., 3° 10' E.) in the North Sea on 25/10/57'. Ringed Ilkley, 24/9/56; Claremorris, Co. Mayo, Eire, 7/2/57 (O.M.P.).

A heavy southward passage at Spurn was recorded on March 17th at 07.15–09.30 hours, when *c.* 2,581 were counted. Flocks of 56 and *c.* 50 came off the sea (C.W., H.G.W.). In autumn, passage was mainly in November, maximum *c.* 150 on

November 6th. Considerable passage north-west at Redcar was noted in October, maxima *c.* 140 in half an hour on October 12th, *c.* 208 in 47 minutes on October 27th (D.R. & P.S.); and *c.* 140 on November 3rd.

408. Brambling (42).—Reported much more frequently in the early months than in the late months. A large flock, with *c.* 500 at the peak on March 10th had dispersed from Thornton Dale by March 24th except for *c.* 45 (R.M.G.). There was a huge concentration in the Hookstone Wood area of Harrogate in early April—*c.* 1,500 on April 8th, none three days later (M.R.S.). Two were still at a roost west of Sheffield on April 14th (A.G.H.). Last at Spurn, three on April 23rd; and the autumnal first on September 23rd. Autumn passage was small, lasting until November 24th, maximum *c.* 30 on October 23rd.

409. Yellowhammer (44).—At Spurn the maximum of *c.* 25 on October 29th may not have travelled very far.

410. Corn Bunting (43).—At Spurn, 30 on January 7th, 49 on April 23rd, and *c.* 20 on August 30th and October 1st, were maxima. *Circa* 47 were at Airedale S. Works on May 1st (C.W.). Plentiful in several breeding areas.

413. Red-headed Bunting (47).—One caught in the Spurn Warren trap on May 19th was in perfect condition (G.R.W., G.H.A.).

416. Oortolan Bunting (50).—A. R. Summerfield recorded two at Spurn on September 21st, and one on the 23rd.

421. Reed-Bunting (55).—A few at Spurn always, and little evidence of passage in spring. Main autumnal passage, October 6th and 7th (*c.* 120 and *c.* 162). *Circa* 74 flew west near North Ferriby on October 13th (B.S.P.) and 24 on the 27th. Inland status normal; even three on Ilton Moor on December 15th (P.Y.).

422. Lapland Bunting (58).—Four flew south at Spurn on January 19th, 11.50 a.m. (R.F.D.); on February 9th the early morning watchers counted 70 passing, and 28 on the 10th (J.C.). Smaller numbers were seen in March, usually flying south in early morning, but occasionally an odd bird remained; and one such was caught on March 30th at 16.00 hours, after being first seen in the Chalk Bank area at 06.15 hours (R.F.D., A.C.)—it was diagnosed as female. A few were seen on twelve days from October 8th, maximum six on November 2nd. One was recognised at Flamborough on October 27th (A. J. Williams, H.O.B.).

423. Snow-Bunting (59).—Ringed Spurn 30/12/55 (and trapped Le Zoute, Belgium, 28/11/56 and 11/12/56); found dying three to four miles from the coast, at Markle, East Linton, East Lothian, Scotland, 17/3/57. Four birds ringed in winter of 1955/56 were re-trapped in winter of 1956/57. Of the 289 Snow-Buntings ringed all but 11 were ringed in the early months, when birds were more susceptible to bait. *Circa* 400 on stubble north of Kilnsea on January 20th was a large figure. Such numbers gradually fell until only odd ones occurred in April. *Circa* 120 were at Hornsea on January 1st (R.W.D.), and near Filey on the 3rd (T.M.C.); and a few occurred inland, with 16 on Little Whernside on February 21st (I.D.); and 18 on Bransdale Moor on March 2nd (T.E.D.).

In autumn began to be recorded at Spurn from September 21st, on odd days to October 17th, and then regularly. *Circa* 120 on November 2nd had become *c.* 300 on the 3rd; and numbers remained large on many days, with *c.* 200 as maximum until December 27th when *c.* 840 flew south between 11.40 and 12.45 hours. Flocks that remained mainly occurred in fields. Higher up the Humber the species occurred in several places: *c.* 900 were in one field at Sunk Island on December 29th (A.C.). Northward up the coast Snow Buntings were recorded at Holmpton, Withersea, Hornsea and Flamborough—*c.* 200 flew over Hornsea on December 24th (R.W.D.); *c.* 100 were at Flamborough on December 2nd (A. J. Williams); and *c.* 100 coasted north-west at Redcar on November 2nd (D.R. & P.S.), with *c.* 100 on Coatham Sands at the year end (P.J.S.). Inland occurrences were mainly on the north-east moors—one near Great Ayton on September 15th, the first of autumn (A. E. Felgate); present in some numbers, Arden Moor and in Farndale, November 8th (E.W.T.); and *c.* 30 at the Lockwood Beck Reservoir on December 28th (A.J.V.). Four at Thrybergh Reservoir on November 24th (C. J. Burley, J. Platt) should be mentioned.

424. House-Sparrow (61).—A hen ringed Spurn 25/8/52, occurred again 31/10/57. No recoveries gave evidence of dispersal of the species from the Peninsula such as the 1956 Report included, and which could be expected with fewer people now living there. The early morning counts of birds passing the Narrow Neck in October to early November included many House-Sparrows (maximum *c.* 570 on October

7th (J.C.); but very few flew beyond the Point; probably they were birds passing from roosts to feeding-places.

425. Tree-Sparrow (62).—General status normal. Some numbers passed down at Spurn in early mornings, October 6th/7th and 20th to 24th, maximum c. 107 on October 20th; and similarly some coasted north-west at Redcar, maximum c. 20 on October 6th (D.R. & P.S.). One ringed High Royd, 27/1/53, was re-trapped 24/2/57 (T.K.). A flock of c. 100 at Hangthwaite, December 15th and 18th, was large (R.J.R.).

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Report on the Birds of the Doncaster District, 1956. Edited by J. S. Trimmingham for the Doncaster and District Ornithological Society. Doncaster Museum Publication. Pp. 18. 1/3.

It is refreshing to read in this very creditable report that 'meetings so far have catered mainly for the serious ornithologist'. 'Locality names in local and county records' were discussed at one meeting, but a breeding locality of at least one rarity is pinpointed more nearly than I would have done. Even to name reservoirs tends to concentrate observation. The 'challenge of the unknown' is exciting but not easy to meet near to towns, where *terra incognita* is so scarce. Congratulations to the Doncaster Museum and to this new Society.

R.C.

SPRING FORAY, THORNTON DALE, April 11th-15th, 1957

W. G. BRAMLEY

SOME fifteen members and friends once again gathered round the hospitable table of Miss Maidment for another foray in the Thornton Dale area.

Friday saw the party in the well-known Kingthorpe area. Conditions were rather dry and the biting cold wind finally drove the party to an early tea. The following day was spent in Howldale, where in the valley bottom things were more moist and a puzzling *Pluteus* was found. (Later searches by the writer failed to reveal further specimens.) The swampy ground and alder wood at Ellerburn provided quite different conditions on the Sunday morning. It was here where most of the larger fungi were found, including some large specimens of *Peziza venosa*, a solitary specimen of *Geopyxis coccinea* in contrast with the quantity observed in 1952, *Psathyra spadiceo-grisea* and a number of smaller agarics. In the afternoon another portion of Kingthorpe did not provide anything further of mycological interest, though the badger setts provided something new for a few members.

We are grateful to the following for their help in determination or confirmation of records: Dr. Dennis and Mr. Reid of Kew for Basidiomycetes, Mr. W. D. Graddon of Congleton for Discomycetes, and Mr. C. Booth of the Commonwealth Mycological Institute for Pyrenomycetes.

Abbreviations

E. = Ellerburn.

H. = Howldale.

K. = Kingthorpe.

* = Not in Mason & Grainger's *Catalogue of Yorkshire Fungi* for V.C. 62.

† = Not in Mason and Grainger's *Catalogue of Yorkshire Fungi*.

BASIDIOMYCETES

† *Merulius himantoides* (Fr.) Fr., K.

Poria viridans (B. & Br.) Sacc., K.

† *Clavaria guillemini* B. & G., E. This is the first British record, and was growing amongst moss on a burnt patch of ground.

DISCOMYCETES

† *Dasyyscypha brevipila* Le Gal., K.

* *Hyaloscypha (Ureolella) leuconica* (Cooke) Nannf., on *Rosa*, E.

† *Tapesia melaleucoides* Rehm., on *Rosa*, H.

† *T. strobilicola* Rehm., on *Larix* cones, H. This has been observed for three years and is apparently the first British record.

PYRENOAMYCETES

† *Anthostoma gastrinum* (Fr.) Sacc., on *Ulmus*, K.

† *Cryptosphaeria eunomia* (Fr.) Fuckel, on *Fraxinus*, H.

† *Cryptodiaporthe hystrix* (Tode) Petrak, on *Acer*, H.

† *C. pyrrhocystis* (B. & Br.) Wehm., on *Corylus*, E.

† *Diaporthe strumella* (Fr.) Fuckel, on *Ribes grossularia*, T.

† *Ditopella ditopa* (Fr.) Schroet., on *Alnus*, E.

† *Eutypella prunastri* (Pers. ex Fr.) Sacc., on *Prunus spinosa*, H.

† *Nectria flavo-viridis* (Fuckel) Wollenw., on *Diatrypella quercina*, K.

HYPHOMYCETES

* *Arthrinium sporophloeum* Kunze ex Fr., on *Carex*, E.

† *Helminthosporium simplex* Kunze ex Fr., on *Aesculus*, K.

† *Periconia hispidula* (Pers. ex Fr.) Mason & M.B. Ellis, on grass leaves, H.

CORRECTION

IN the *Botanical Section Report* (p. 22, l. 27) it is stated that the Water Figworts in the Shipley district are all *Scrophularia nodosa*. This should read *S. umbrosa*.—C.M.R.

BOOK REVIEWS

Insect Flight, by J. W. S. Pringle. Pp. viii+133, with 52 text-figures. Cambridge Monographs in Experimental Biology 9. C.U.P. 1957. 15/-.

This is an excellent book and a worthy member of this series of monographs. It is a work of high scientific calibre encompassing an impressive knowledge of wing morphology, physiology and histology, as well as more than a modicum of mathematics and bio-chemistry. To the ordinary biologist much of it is heavy going and it is hardly a book for the amateur naturalist, but it must be admitted that the subject could not really have been adequately covered at a lower level. Many parts of the book are absorbingly interesting and it is at all times worth while making an effort to keep contact with the writer. The first part is concerned with the anatomy of the wings, the wing bearing segments and the wing muscles. Then follow chapters on the physiology and biochemistry of flight muscles and on aerodynamics. The last chapter on nervous control and the sense organs of the wings I found the most absorbing of all. It is perhaps a little surprising to find that groups of sense organs, sensitive to strains in the wing skeleton should occur practically always in the same place on the subcosta and radius, and that chordotonal organs, sensitive to vibration or stretch, should always occur near the tegula and on the base of the radius, media and cubitus. Dipterists will also appreciate the interest of discovering that precisely corresponding groups of sense organs occur on the halteres.

H.H.

Handbooks for the Identification of British Insects. Published by the Royal Entomological Society of London, 41 Queen's Gate, S.W.7.

Vol. I, part 16, Siphonaptera, by F. G. A. M. Smit. June 1957. 94 pp., 200 figs. Price £1.

Vol. IV, part 9, Coleoptera, Pselaphidae, by E. J. Pearce. June 1957. 32 pp., 41 figs. Price 6/-.

The last account of the British fleas was that of Rothschild published in 1915 (*Ent. mon. Mag.*, 51, 49-112) which included 45 species. The present excellent revision includes 56 species and subspecies and is notable for the extent and excellence of its illustrations. Much valuable information is condensed into its pages dealing not only with the systematics but also with distribution and host-associations. The introduction includes a valuable glossary in addition to information on collecting, mounting, etc. The included species are grouped under two super-families and five families. Several of the species would appear to have little standing as British insects, *Echidnophaga gallinacea* (Westwood) is known only from a migrating white wagtail on Skokholm Island and *Xenopsylla brasiliensis* (Baker), happily, only from rats in Cardiff docks, but the value of their inclusion is obvious. There appear to be very few obscurities but what does the author mean (p. 25) in reference to *Archaeopsylla erinacis erinacis* (Bouché) when he says: 'The principal and only host is the hedgehog'. *Spilopsyllus cuniculi* (Dale) is noted as a vector of myxomatosis.

Father Pearce's Handbook on the Pselaphidae has its predecessor in Denny's monograph of 1825 (which also included the Scydmaenidae) although the family is treated, of course, in the general works of Fowler and Joy. The recent work of Professor Jeannel on this family in the 'Faune de France' series has left some problems which are resolved, as far as the British species are concerned, in the present excellent revision. Mr. Pearce states: 'I have quite deliberately made a considerable number of concessions with a view to aiding inexperienced amateurs, for whom this family inevitably presents a difficult proposition. I have had particularly in mind students at the various field-centres who attempt the identification of their captures. To them I hope this handbook will prove of special usefulness.' This is a very proper point of view, as one of the original aims of the series, and we could wish to see it followed by other authors of 'Handbooks'. In the present part there appears to be no loss of utility to the more advanced student by this action. The introductory pages include useful information on collecting, dissecting, mounting, etc. A revision of the difficult genus *Euplectus* is most welcome, and also the clarification of recent work by Jeannel, Pearce and others on *Biblioplectus*. Another valuable feature are the excellent whole figures of species by Mrs. O'Brien. Owing to doubts about the validity of previous identifications there is still much work to be done on the distribution of these interesting beetles, and would-be students could have no better guide than Father Pearce's Handbook.

W.D.H.

The Natural History of the Otter, by Marie N. Stephens. Universities Federation for Animal Welfare, 7a Lamb's Conduit Passage, London, W.C.1. Pp. 88, 4 plates. 10/6 post free.

This comprises a report to an Otter Committee set up under the auspices of UFAW in response to a suggestion by the Home Office Committee on Cruelty to Wild Animals that the feeding habits of the otter should be investigated to determine the advisability of control, especially on rivers where there are substantial fisheries.

Miss Stephens sets out the known facts, both from the literature and from her own investigations but these, with regard to most facets of the natural history of the species are sparse and inconclusive. Thus the present evidence would suggest that breeding occurs evenly throughout the year but the length and periodicity of oestrus is not known. The gestation period is put at about nine weeks in the European Otter whereas American investigators of their allied species suggest as many months, due no doubt to delayed implantation.

Equally so, at the heart of the matter, the food of the otter has not been statistically determined, perhaps largely because its feeding habits are opportunist. It is felt, however, that only the occasional settler near a hatchery or among high concentrations of game fishes, is positively harmful to human interests. Miss Stephens has examined a limited number of stomach contents and a large number of spraints but the fact that the fisheries boards are more active on upland waters must surely account for the fact that twice as many Salmonidae occurred as prey than the Cyprinidae which are certainly more readily available in the slower rivers. Reports from fisheries upon which otters are protected rather than destroyed show no diminution in the salmon taken by anglers but a positive increase.

This work certainly points the way to a good deal more investigation, not only of a systematic kind. Anything and everything that can be ascertained about the otter that is the product of observation and not hearsay will, for a long time to come, be valuable in building up our knowledge of a little-studied mammal.

E.H.

Facts about Furs, by F. Jean Vintner. Universities Federation for Animal Welfare, 7a Lamb's Conduit Passage, London, W.C.1. Pp. 48. 2/-.

This is the second edition of a pamphlet first published in 1933 and the author finds occasion for rejoicing in several developments which have taken place in the interval. First and foremost, perhaps, has been the development of synthetic furs which threaten to oust all but the luxury furs from the market. In addition, mink farms throughout the world are now known to produce over 10,000,000 pelts annually and this must substantially reduce trapping pressure on wild populations.

At the same time it is estimated that at least 53,000,000 animals are still taken annually from the wild, mostly by means of the inhumane leghold trap. It is conceded that no humane trap has yet been invented which is as useful, simple, light and cheap but we must again rejoice that the open gin will soon be illegal in this country.

No entirely suitable substitute for rabbit fur has yet been discovered in the felting trade and it is an interesting fact that France produces as many tame rabbit skins as the whole of the rest of Europe.

E.H.

British Mammals, by Maurice Burton. Oxford Visual Series. Pp. 64 with numerous illustrations. Oxford University Press. 11/6.

As an introduction to the study of our British mammal fauna this little book provides most stimulating reading. It will be particularly useful for those wishing to embark upon field studies, an aspect of our mammalian life which has received all too little attention in the past. It is arranged in an original and unconventional manner and the thirty short chapters contained in it cover a wide variety of subjects. Thus essays are included on feeding and dentition, social habits, territories, home life, toilet, play, learning, courtship, calls, hibernation and flight. The book is very well illustrated with photographs and drawings by the author's daughter. The author stresses the importance of observation and the preservation of careful records in the study of our mammals and it is certain that this charming book will encourage the present awakening of interest in them. Although primarily intended for the beginner and written with admirable clarity and simplicity, the more serious and experienced student will find much of interest in its pages.

D.L.H.

The Mute Swan in England, by N. F. Ticehurst. Pp. 134 with 31 plates and numerous text-figures. Cleaver-Hume Press, London, 1957. 35/-.

Dr. Ticehurst's pioneer researches into the history of swan-marking have continued over the past forty years. They have been published from time to time in *British Birds* and in various antiquarian journals but this volume is not only a synthesis of what has already been published but a considerable extension and elaboration. The title may be thought somewhat misleading since it refers to a work which comprises historical rather than ornithological research but it is nonetheless fascinating on that account. In earlier times the Mute Swan was a source of food, especially on feast days and the privilege of swan-keeping, normally vested in the Crown, was jealously guarded, and only extended to people and institutions of wealth and influence. Such a prerogative was naturally invested with considerable legislation and ceremony and the bill and foot marks by which the ownership of the swans were recognised and registered have been scrupulously recorded. Dr. Ticehurst has located, and extracted from, practically all the known Swan-rolls, and he figures several hundred of the marks which have been from time to time in use.

Since all the swans were kept in a semi-feral state there was the need for a complicated procedure to ensure that their progeny were fairly divided between the owners of the parents and the ground upon which they nested. This led to the Swan-upping which remains as a picturesque ceremonial on the Thames.

There appears to be no record of Yorkshire marks though the Archbishop had rights upon the Thames.

This is a well-produced and authoritative account which summarises and tabulates a vein of knowledge which has been worked almost exclusively by its author to whom we are thus doubly indebted.

A.H.

The Bladder Campions, by E. M. Marsden-Jones and W. B. Turrill. Pp. x + 378 with 44 plates and 19 text figures. Ray Society, 1957. 30/-.

This book brings together the results of more than thirty years' research on the two campions, *Silene vulgaris* and *S. maritima*. It is concerned with a detailed analysis of the phenotypic and genotypic bases of morphological characters, their taxonomic significance and their relation to geographical and ecological variants and distributions. More than thirty papers dealing with their researches on these two species have already been published by the joint authors and the present volume is a restatement and reassessment of all their previous findings and also incorporates much new and unpublished work. The book consists largely of detailed accounts of population studies on a wide range of plants of both British and foreign origin, on variants and hybrids, on genetical experiments and cytological observations and on fertility and sterility factors. As a contribution to experimental taxonomy it is a painstaking piece of work though a somewhat arid array of data. The final comment that 'we have only opened up the subjects of their "make-up", their behaviour and their history' seems a scanty reward for thirty years of hard labour.

W.A.S.

Nature is Your Guide, by Harold Gatty, with a foreword by Lt.-Gen. Doolittle. Pp. 254 with 16 plates and 26 drawings. Collins. 16/-.

In the past many native peoples acquired extraordinary skill in finding their way over great distances of trackless country or vast expanses of open sea and returning successfully to their point of departure. The remarkable navigating skill of the Polynesians was a notable example. Such journeys were dependent on highly developed powers of observation coupled with accurate interpretation of the signs observed. Harold Gatty, who was Wily Post's navigator during their record-breaking eight-day flight round the world in 1931, made a life-long study of natural, as opposed to instrumental methods of navigation and pathfinding on sea, land and in the air, and in this book, which he rightly calls a 'new sort of outdoor book' he tells the traveller or rambler what to look for and how to read the signs correctly. Apart from the evidence afforded by sun, moon and stars, which is duly explained, there are probably no places on earth including deserts and polar wastes, or on the open seas where some evidence is not available which has an important bearing on orienting and direction finding. The sub-title of this unusual book, 'How to find your way on land and sea', explains its scope. It is full of useful information and will

be of value to the outdoorsman not merely for its practical advice but because it can hardly fail to sharpen the observation of all who are prepared to observe and think rather than rely exclusively on map and compass.

W.A.S.

Plants and Animals of Pond and Stream, by W. J. Prud'homme Van Reine. Pp. 160, 34 plates. John Murray, London, 1957. 12/6.

This is a strict translation of a Dutch publication, accompanied by the same plates. On this account, although by far the greater part of the plants and animals figured have a comparable status in the British Isles, there are some which do not occur at all. Again, with regard to plants it is not generally difficult to define those with aquatic and sub-aquatic preferences but with the more mobile animals the selection is bound to be more arbitrary. Within these limitations the book is succinctly and attractively devised and can be commended to those who are not already naturalists as an introduction to the more definitive works which are carefully cited.

A.H.

The London Bird Report, No. 21 (1956). Edited by F. H. Jones, with the help of eight Recorders. Pp. 65. The London N.H. Society. 5/-.

To Yorkshiremen, early 1958 seems late for a 1956 Report to appear; but without an editor willing to devote most of his time to the task during the first six weeks of the year, it is doubtful if the Yorkshire, traditional presentation of a report in March, concerning the birds of the previous year could be maintained, even if co-operation by contributors continued to include lists sent in to the editor at regular intervals during each year. The influx of wild fowl, waders, etc., during the severity of February was an outstanding feature of 1956 in the London area, as in Yorkshire. Whooper and Bewick's Swans appeared where in most years they are absent. R. C. Homes writes on the phenomena of that period. 'Wood-Sandpipers were unusually numerous on the spring passage'—as in Yorkshire. The 'Classified List' fills thirty-six interesting pages. S. Cramp reports on the census of Mute Swans 1955 and 1956; and W. D. Melliush on Great Crested Grebes 1946-1955. An excellent Report, useful for comparison with those of other regions.

R.C.

The Daily Behaviour of Birds on the Farne Islands, by N. Rollin, being No. 6 of Vol. XII of *Transactions of the N.H.S. of Northumberland, Durham and Newcastle-on-Tyne*. Pp. 24. 3/6.

Part of "a comparative study of sea-bird, wading-bird and land-bird behaviour" in the two counties; and covering Shag, Puffin, Eider and Arctic Tern in this booklet. The sea-birds 'tend to have days surprisingly similar to land-birds.' With wading-birds 'tidal modifications are, of course, normally much more severe, and nocturnal phases are much more prominent.' A useful result from a lot of organised watching.

R.C.

Mr. Collins and Tony go Fishing, by Christine Dudley and F. R. Elwell.

Mr. Collins and Tony visit Heron Wood, by the same authors.

Pp. 58 with drawings and photographs. Heinemann, London, 1957. 7/6 each.

Merry Brown Hare, by A. Windsor-Richards. Pp. 90 with drawings. Hutchinson, London, 1957. 7/6.

Mr. Collins, the farmer, and his young friend Tony will be well known to the many listeners to the Nature Study broadcasts for schools. Youngsters will acquire quite a lot of factual information without noticing it while reading these attractively written accounts of nature walks-with-conversation. The photographs are pleasing. Mr. Collins seems almost oblivious of the plant world, and keeps his eye firmly on water beetles, mice, squirrels, herons and the like.

Merry Brown Hare is a fictional biography of a hare based on real life incidents. For the rather older child, as the story moves slowly while the author expounds on the beauty of the scene. All three books would make admirable presents for the young naturalist.

B. A. KILBY

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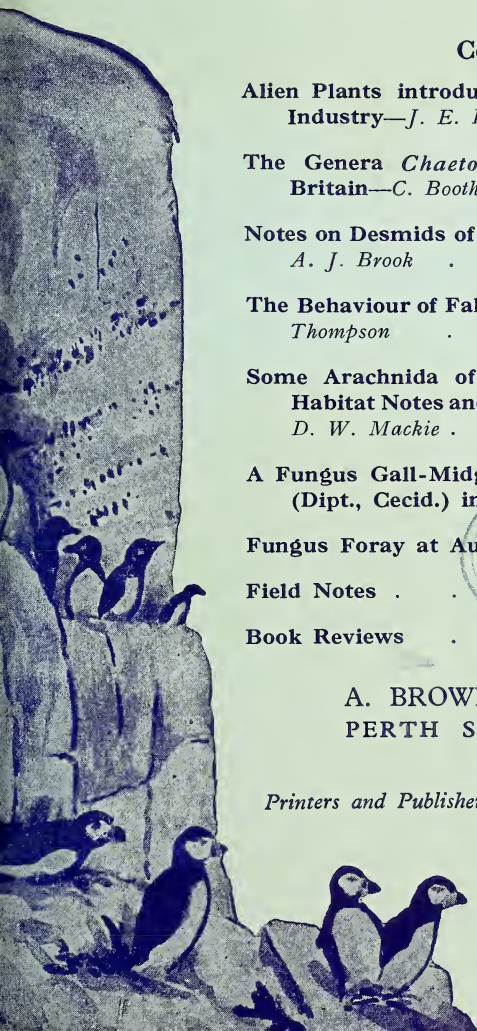
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WEEK-END COURSE ON BIRD MIGRATION

14th-16th November, 1958

GRANTLEY HALL ADULT EDUCATION COLLEGE, has arranged (in conjunction with the Y.N.U. Ornithological Section and the British Trust for Ornithology), a week-end course on 'BIRD MIGRATION,' from Friday evening to Sunday evening, 14th-16th November, 1958.

Lecturers will be Kenneth Williamson (the B.T.O. Migration Research Officer); Robert Spencer (secretary of the Ringing scheme); and Dr. G. V. T. Matthews of the Severn Wildfowl Trust (author of 'Bird Navigation').

Full details, together with information regarding fees, transport from Ripon to Grantley Hall, etc., can be obtained from the Warden, Adult College, Grantley Hall, Nr. RIPON, Yorks., to whom application should also be made.

Y.N.U. Subscriptions for 1958 (20/-) were due on January 1st, and should be sent to The Assistant Treasurer, Mr. G. A. Shaw, Botany Dept., The University, Leeds, 2.

NOTICE.

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Copies of Mr. A. A. Pearson's Papers, Mycena, The Genus Lactarius, and The Genus Inocybe, and second editions of British Boleti and The Genus Russula, price 2/6 each, Dr. F. B. Hora's The Genus Panaeolus in Britain, price 2/6, and Mr. P. D. Orton's Cortinarius (Part 1 and 2) price 7/6 each, may be obtained, from the Editor of *The Naturalist*.

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ALIEN PLANTS INTRODUCED BY THE YORKSHIRE WOOL INDUSTRY

J. E. LOUSLEY

OF all the animals domesticated by man, none have had a greater influence in changing the scenery of the world than sheep. By their close grazing they completely change the succession of vegetation on the land on which they feed, and in these changed habitats a complex of plants from other parts of the world are able to thrive. Thus in the great wool producing areas of the temperate parts of Australia, South Africa, South America and elsewhere, plants from southern Europe have become



Photo by]

[J. E. Lousley

Fruit of Unicorn plant (*Utricularia lutea* (Lindl.) Van Eselt) found at Bradford in 1956 in a consignment of wool from Uruguay.

firmly established. In addition there has been a considerable exchange of species between the three continents in the Southern Hemisphere.

Most of the plants with aggressive spread which are closely associated with sheep have seeds or fruits which are easily embedded in the animal's coat and difficult to remove—they are thus transported away from the place where they are produced to germinate in another spot. By this means they can rapidly colonise new ground, and since sheep are commonly moved to new pastures, or sometimes taken to new countries, the new ground may be far from the place where the seeds are produced. When wool is exported uncleaned, the seeds and fruits go with it and their removal entails great expense before the material can be used for manufacture. Wool taken from the neck and breast of the sheep is usually the most seriously affected since these parts of the animal brush against vegetation most as they feed, but other parts of the fleece are also involved. In this way foreign grown seeds and fruits are being steadily imported in very large numbers into wool manufacturing districts, and Yorkshire, as one of the most important centres of the industry in the world, is receiving its share.

The plants best adapted to transport by sheep, and which cause the greatest difficulties in the wool industry, are those with spines on the fruit. In some species these spines are hooked, thus making them extremely difficult to remove. The most common fruits of this type are those of the bur medicks (*Medicago minima*, *M. laciniata*, *M. praecox*, *M. hispida*, *M. arabica*, etc.), which are responsible for much of the 'burry wool' of the trade. Also very common are hardheads or Bathurst burs (*Xanthium spinosum*), which are larger but, fortunately, less difficult to remove. Other common species with hooked spines include an Australian dock (*Rumex brownii*) and an amaranth (*Amaranthus thunbergii*). Long spines without hooks are almost equally efficient—examples include many species of grasses (e.g. *Hordeum* spp., known in the trade as 'threecornered Jack'), The hygroscopic, corkscrew-like fruits of storksbills (*Erodium cygnorum*, *E. botrys*, *E. cicutarium*, *E. moschatum*, etc.) commonly become firmly embedded in the wool as they coil and uncoil with changes in moisture.

The largest fruits found in imported wool, and those with the most wickedly efficient means of attaching themselves to the sheep, are fruits of yellow martynia (*Ibicella lutea*). A number of these were found at a Bradford mill in 1956 in wool imported from Uruguay (Fig. 77). This plant is a native of South America and the fruit not only has small protuberances which catch on to wool, but also two recurved horns which can be as much as six inches long. These grip the feet of grazing animals and also become fixed in their nostrils causing most painful injuries; embedded in a sheep's coat the animal has little chance of removing them. In addition to fruits with special adaptations such as those described, seeds and fruits of almost all types may on occasion get caught up in wool and be brought to this country.

Until about a century ago imported wool, like our native wool today, was relatively free from vegetable matter difficult to remove mechanically. It was at about that time that plants with burry fruits spread rapidly in the new countries to which they had been introduced and that the presence of 'burs' in quantity started to cause serious trouble. The earliest considerable haul of wool aliens found in Yorkshire which I have been able to trace was made by Charles Hobkirk at Whitley Willows, about three miles from Huddersfield in 1858 (Hobkirk, 1858). Although their significance was not appreciated at the time, at least 11 species in his list were almost certainly brought in with wool.

Until about this time manufacturers had found mechanical methods of cleaning the wool adequate, but the increase in the proportion of burs forced them to resort to chemical treatment in addition. The so-called 'carbonising' process involves treating the wool with chemicals such as sulphuric acid so that the burs can be crushed between heavy iron rollers and their remains 'willowed' out as loose dust. In practice this process as carried out in scouring works is much more complicated than this, and is subject to many variations, but in all cases the seeds and fruits are subjected to strong chemicals and high temperatures from which survival would seem unlikely. In spite of this a surprisingly large proportion remain viable if removed from the material prior to crushing. Thus, for example, I have grown *Trifolium subterraneum*, *Medicago hispida*, *M. minima*, and *Erodium moschatum*, from seeds which had passed through a carbonising process at a Shipley works where such strong chemicals had been used that even the outer coats of the burs of *Xanthium spinosum* were eaten away. It is possible that in some cases the carbonising process may even assist the germination of seeds with thick outer coverings.

In removing vegetable matter by mechanical means a considerable amount of the wool remains attached to the fruits, and a stage is reached when further extraction is uneconomic. Such 'burry wool' has however considerable value as a manure and is included with other waste wool in 'shoddy' sold for agricultural and horticultural purposes. Much of this is loaded up in railway wagons in the manufacturing district of Yorkshire and sent to many other parts of Britain; some of it is used on fields within the county.

In the proximity of woollen mills, plants which have grown from foreign seeds brought in by the industry may be found on waste ground near the factories and on rubbish tips belonging to local authorities or privately owned. They abound in certain good yards and loading bays on the railways, and have in the past occurred along the Aire and other rivers and by canals. In addition they grow luxuriantly on sewage farms such as the present one at Esholt, and the former Frizenhall sewage farm where the botanists of fifty years ago found so many treasures. The seeds reach these places in the water used for washing the wool which passes down drains

at the mills and into the sewers. Away from the industrial area, these aliens appear in fields which have been dressed with 'shoddy'. Since one of the most valuable features of this manure is its help in improving the texture of the soil and retaining moisture, it is used mainly on light ground and particularly where this is sandy. On account of its somewhat high cost it is most usually employed for vegetables.

At the beginning of the present century local botanists under the leadership of J. Cryer, F. Arnold Lees, and F. Rhodes, took great interest in the aliens of the heavy woollen industrial area of Yorkshire. Many fine specimens are preserved in their herbaria and great care was taken in the identification of their material, though some of the names now require revision. In the period 1916-1920, E. C. Horrell was an enthusiastic collector and student of alien plants in the West Riding, but this was about the end of the era of determined study, and for the next thirty years little interest appears to have been taken in the subject. Then, in July 1952, J. G. Dony, who had been working on wool aliens found in arable fields in his own county of Bedfordshire, paid a short visit to Bradford. From City Road, Eccleshill, Morley, Heckmondwike, Shipley and Kirkheaton, he listed over 40 species, some found in several places, some of considerable interest. Since then there have been many visits by various botanists including myself, Dr. Dony, Miss C. M. Goodman, D. McClintock, Miss C. M. Rob and Miss M. McCallum Webster, and local botanists have shown renewed interest in the study. Of the latter, D. R. Grant and T. Schofield have recently published a useful note on Bradford aliens, including some introduced by the wool industry, in *The Naturalist*. Two arable fields dressed with shoddy found by Miss C. M. Rob produced good lists. The first was near Thirsk in 1954, and was also visited by Dr. Dony and myself; the second, at Topcliffe in 1957, was worked also by Miss M. McCallum Webster.

This study of Yorkshire wool aliens is not only of great local interest but also assists in studies of much wider scope. At the present time efforts are being made by Dr. Dony and myself to place the study of wool aliens on a much sounder basis than has been the case in this country hitherto, and to correlate our work with that of workers overseas in countries where wool is produced or manufactured. To this end we are compiling lists from as many parts of Britain as possible with the assistance of friends, and annotating them with frequencies, etc., so that the variations in composition from place to place, and from year to year, can be studied.

From these lists it is already apparent that a number of 'native' species are being regularly imported as wool aliens and that established introductions from seed brought in in this way are likely to confuse work on the distribution of the British flora. Examples are *Erodium moschatum*, *Medicago hispida*, *Trifolium arvense*, *Hypochoeris glabra*, *Vulpia bromoides* and *Vulpia myuros*. In some cases the variants found as wool aliens are usually different from those found as 'natives'—*Medicago minima* and *Solanum nigrum* are striking examples. Then, again, the vast numbers of foreign seeds brought in annually, and their distribution by commerce within Britain, present potential opportunities for species from other lands to become established. Fortunately, it happens that none of those brought in with shoddy have so far become serious pests of arable land and this is mainly because our summers are not sufficiently hot and long to allow them regularly to produce viable seed. Outside cultivated ground a few species have already become established such as *Acaena anserinifolia*, which has competed effectively with native vegetation for long periods on Tweedside, Holy Island, Dartmoor and in Kent, Norfolk, etc. (Lousley, 1956). It seems not unlikely that others, such as *Senecio inaequidens*, *Verbena bonariense*, and *Bromus diandrus* will become permanently established and study of the early spread may have great significance at a later date.

Such studies may also have some economic importance. To know which potential weeds are being introduced in large numbers is clearly of interest to the agriculturalist and may help to control infestations in early stages. On the other hand, the presence of vegetable material in wool is the cause of enormous expense to the industry and large sums are spent in the producing countries on research into the species represented. They need to do so as the proportion of included fruits can seriously depreciate the price or even render the wool unsaleable. I have seen South African wool at Kirkheaton stacked as waste because the cost of removing the vegetable matter would not be justified, while some thirty years ago 'B.A.' wools got such a bad name that the Bradford trade would buy only with a guarantee that the bur-content did not exceed 5 per cent. Today these South American wools are less of a problem but even so I have recently had samples of Uruguay wool from

Bradford which were full of burs from which I grew *Medicago minima*, *M. hispida*, *M. arabica*, *M. laciniata* and *M. praecox*.

It is often difficult to decide the country of origin of wool from the associated plants, and this may be so even when there has been no mixture at the mill or subsequently. Many species, and especially those of Mediterranean origin, grow equally in Australia, South Africa and South America. In the case of the identification of a plant not seen before, one is therefore usually faced with the difficulty that it may have come from any of these areas, and others besides, since the associated species will often fail to give a clue to their origin. Identification is made even more difficult by the fact that there are pairs or groups of species in Australia, Africa and South America which are so closely related that they can only be separated with difficulty, if at all. Examples which spring to mind include the Australian *Senecio lautus* and the South African *S. inaequidens*, the Australian *Lepidium hyssopifolium* and the South African *L. divaricatum*, and *Carpobrotus* with closely related species in all three continents. Such plants are easy enough to identify when the origin is known, but present extremely difficult problems in the absence of this information.

The purpose of this paper is to draw attention to the great interest of the wool aliens to be found in Yorkshire, and as evidence of this the following list covers those which have come to my personal notice during the past five years. Records of others are to be found in the pages of recent numbers of *The Naturalist*. I would like to express my gratitude to the friends already mentioned who have supplied specimens, and especially to Dr. J. G. Dony and to Mr. D. McClintock. I am grateful also to Mr. J. P. M. Brenan, Mr. C. E. Hubbard and Dr. A. Melderis for assistance with the identification of some of the specimens and to Miss C. M. Goodman for supplying the fruit from which the illustration was prepared. I will be pleased to name wool aliens sent to me at 7 Penistone Road, London, S.W.16, provided the material sent is adequate and that I can retain for future reference at least part of any unusual specimens.

YORKSHIRE WOOL ADVENTIVES 1953-57

The following list is based solely on specimens in my herbarium or which have been sent to me for identification. Further material is still to be determined, but while the list is not complete it will serve to indicate the large number of species still being brought in by the wool industry. The sequence is approximately that of Clapham, Tutin and Warburg, *Flora of the British Isles*, 1952.

Frequencies are based on my own observations supplemented by notes on specimens which Mr. D. McClintock has brought to me, and are indicated as follows: vc=very common; c=common; f=frequent; r=rare, and vr=found on only one occasion (though sometimes in quantity, and sometimes collected by more than one botanist). For some species the symbols shown are likely to understate the frequency.

<i>Argemone mexicana</i> L.	.	.	r	<i>Chenopodium carinatum</i> R. Br.	.	r
<i>Sisymbrium orientale</i> L.	.	.	c	<i>C. cristatum</i> (F. Muell.) F. Muell.	.	vr
<i>S. irio</i> L.	.	.	vr	<i>Malva parviflora</i> L.	.	c
<i>Rapistrum rugosum</i> (L.) All.	.	.	vr	<i>Lavatera plebia</i> Sims	.	vr
<i>Lepidium hyssopifolium</i> Desv.	.	.	f	<i>Erodium cicutarium</i> (L.) L'Herit.	.	c
<i>Brassica tournefortii</i> Gouan	.	.	r	<i>E. moschatum</i> (L.) L'Herit.	.	f
<i>Hirschfeldia incana</i> (L.) Lagrèze-Fossat	.	.	r	<i>E. cygnorum</i> Nees	.	c
<i>Kohlruschia prolixa</i> (L.) Kunth	.	.	vr	<i>E. malachoides</i> (L.) Willd.	.	vr
<i>Carpobrotus</i> sp. (juvenile)	.	.	vr	<i>E. botrys</i> (Cav.) Bertol.	.	f
<i>Cryophyton crystallinum</i> (L.) N.E. Br.	.	.	r	<i>E. obtusifoliatum</i> (Maire, Weiller & Wilczek) J. T. Howell	.	vr
<i>Amaranthus chlorostachys</i> Willd.	.	.	r	<i>Monsonia brevirostrata</i> R. Knuth	.	vr
<i>A. retroflexus</i> L.	.	.	f	<i>Medicago minima</i> (L.) Bartal.	.	
<i>A. thunbergii</i> Moq.	.	.	c	(and varieties)	.	vc
<i>A. thunbergii</i> Moq. f. <i>maculatus</i>	.	.	vr	<i>M. laciniata</i> (L.) Mill.	.	vc
<i>A. dinteri</i> Schinz var. <i>uncinatus</i> Thell.	.	.	vr	<i>M. praecox</i> DC.	.	vc
<i>A. spinosus</i> L.	.	.	vr	<i>M. hispida</i> Gaertn. (and varieties)	.	vc
<i>Atriplex muelleri</i> Benth.	.	.	vr	<i>M. arabica</i> (L.) Huds.	.	vc
<i>Chenopodium murale</i> L.	.	.	f	<i>M. aschersoniana</i> Urban	.	r
<i>C. giganteum</i> Don	.	.	c	<i>M. tribuloides</i> Desr.	.	r
<i>C. probstii</i> Aellen	.	.	c	<i>Trifolium subterraneum</i> L.	.	c
<i>C. pseudauricomum</i> Murr.	.	.	vr	<i>T. glomeratum</i> L.	.	r

<i>Trifolium angustifolium</i> L.	vc	<i>Inula graveolens</i> L.	f
<i>T. resupinatum</i> L.	vr	<i>Erigeron bonariensis</i> L.	c
<i>T. tomentosum</i> L.	r	<i>Carthamus lanatus</i> L.	c
<i>T. striatum</i> L.	r	<i>Centaurea diluta</i> Ait	vr
<i>T. scabrum</i> L.	r	<i>C. solstitialis</i> L.	vr
<i>T. arvense</i> L.	f	<i>Hypochoeris glabra</i> L.	vr
<i>Scorpiurus subvillosus</i> L.	vr	<i>Lolium rigidum</i> Gaud.	f
<i>Bupleurum semicompositum</i> L.	vr	<i>L. loliaceum</i> (Bory & Chaub.) Hand.-Mazz.	r
<i>Ammi majus</i> L.	r	<i>Vulpia myurus</i> (L.) C. C. Gmel.	f
<i>Cucumis myriocarpus</i> Naudyn	vr	<i>V. bromoides</i> (L.) S. F. Gray	c
<i>Rumex brownii</i> Campd.	c	<i>Bromus unioloides</i> H. B. K.	r
<i>Physalis ixocarpa</i> Brot. ex Hornem.	c	<i>B. rigidus</i> Roth	r
<i>Nicandra physaloides</i> (L.) Gaertn.	f	<i>B. diandrus</i> Roth	vc
<i>Datura tatula</i> L.	c	<i>B. rubens</i> L.	c
<i>D. stramonium</i> L.	c	<i>B. molliformis</i> Lloyd	vr
<i>Solanum sarachoides</i> Sendtn.	vr	<i>Chloris virgata</i> Swartz	vr
<i>Cynoglossum australe</i> R.Br.	vr	<i>Lamarkia aurea</i> (L.) Moench.	r
<i>Marrubium vulgare</i> L.	c	<i>Hordeum hystrix</i> Roth	c
<i>Bidens pilosa</i> L.	vc	<i>H. glaucum</i> Steud.	c
<i>B. bipinnata</i> L.	f	<i>H. pusillum</i> Nutt.	r
<i>Xanthium spinosum</i> L.	c	<i>H. leporinum</i> Link	r
<i>X. ambrosioides</i> Hook. & Arn.	vr	<i>H. jubatum</i> L.	c
<i>Schkuhria pinnata</i> (Lam.) Thell.	f	<i>Agrostis avenacea</i> J. F. Gmel.	vc
<i>Calotis cuneifolia</i> R. Br.	c	<i>A. lachnantha</i> Nees	f
<i>Cenia turbinata</i> Pers. var. <i>pusilla</i> Schlecht.	vr	<i>Polypogon monspeliensis</i> (L.) Desf.	vc
<i>Tagetes minuta</i> L.	c	<i>Apera spica-venti</i> (L.) Beauv.	r
<i>Senecio inaequidens</i> DC.	f	<i>Gastridium phleoides</i> (Nees & Meyer) C. E. Hubbard	f
<i>S. pterophorus</i> DC.	r	<i>Phalaris minor</i> Retz	f
<i>Cryptostemma calendulaceum</i> (L.) R.Br. (<i>Arctotheca calendula</i> (L.) Levyns)	c	<i>P. brachystachys</i> Link	r
		<i>P. paradoxa</i> L.	f
		<i>P. tuberosa</i> L.	vr
		<i>Panicum laevifolium</i> Hack.	r

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FIELD NOTES

White Rumped Sandpiper (*Calidris fuscicollis*), A Bird New to Yorkshire.—On Saturday, October 19th, 1957, at Spurn Bird Observatory, while en route to breakfast, the writer in company with R. F. Dickens found on the road about two hundred and fifty yards from Warren Cottage a dead wading bird beneath overhead wires. The bird had apparently only been dead about two hours. A wound on the left side of the neck was consistent with it having struck the wires.

Plumage examination showed it to have a white rump like that of Curlew Sandpiper but a short straight bill. It was smaller than Dunlin and the two observers believed it to be a White Rumped (alias Bonapartes) Sandpiper.

It was also examined by the following observers: G. R. Bennett, J. A. S. and Mrs. Borrett, A. Bownes, R. and Mrs. Chislett, R. G. Hawley, S. Martin, B. C. Potter, D. J. R. and Mrs. Potter, D. A. Rushforth, C. Smith and four boys from Bootham School, S. J. Weston, G. R. Wilkinson, and D. R. Wilson.

A full description was entered in the Spurn Bird Observatory log book (see below). The bird was subsequently sent to A. Hazelwood for confirmation of identity, and it proved to be a first winter female. The skin is now available for examination in the Bolton Museum. This is the first known occurrence of this American wader in Yorkshire.

DESCRIPTION

Crown: feathers brownish-black edged warm-brown. Feathers of nape rather lighter. Back, blackish-brown, edged chestnut; lower back edged white, less distinct brown edgings to feathers of rump. Upper tail, coverts white, forming a broad white band across the tail. Rectrices, greyish-brown, edged whitish; two central tail-feathers distinctly darker—blackish-brown with narrow whitish edgings.

Lores: dark grey-brown. Prominent whitish superciliary stripe ending abruptly behind eye. Cheeks and ear-coverts, greyish-brown. Chin, whitish. Feathers of upper breast very pale buff with darker centres; rest of underparts white, slightly tinged buff and with slight streaking on flanks.

Wings: primaries and secondaries brownish-black, innermost secondaries with white edgings and tips. Primary coverts brownish-black with narrow white tips. Secondary coverts with broader white tips forming a narrow white 'wing-bar' on the open wing. Rest of wing coverts brownish-black edged and tipped buff and warm brown. Axillaries and under wing linings whitish.

Soft parts: Eye, dark (black?). Bill straight, slightly decurved and broadening at extreme tip, black with base of lower mandible brownish horn. Legs, blackish-olive.

Length of bill: 22 mm. Wing: 126 mm. Tarsus: 25 mm.—J. R. MATHER.

Toilet in Vespertilionid Bats.—Bats of the genus *Myotis* using caves around Bury St. Edmunds, Suffolk, as winter roosts have been observed performing their toilet on several occasions. Extensive notes were made at noon on January 3rd, 1949, when a *M. daubentoni* or *M. mystacinus* was watched. The bat hung by its left foot from the roof of the cave, about 12 feet above the floor, in the manner described by Harrison-Matthews in *British Mammals* (1952) for horse-shoe bats. It used for toilet its right foot and its mouth. The right foot had a very large area of use, working both dorsally and ventrally on the trunk, apparently combing the fur. The foot reached the ears and the top of the head also, although it is not known whether the former received attention. Scratching of the right flank was also observed, the leg performing a rotary movement and combing the fur on the ventral stroke. The movements of the leg were vigorous at all times. Occasionally the right foot was held along the ventral surface of the body while the muzzle was bent towards it. This was sometimes done to facilitate combing the chin, while at other times the claws seemed to enter the mouth, on which occasions there were no scratching movements. The extensive use of the leg shows that the acetabulum allows considerable femoral mobility. The wing membrane received scrupulous attention from the mouth. Still hanging by one foot the bat first cleaned its partly-extended left wing and then its right. By moving both head and wing the bat was able to work over both the upper and lower surfaces. The loose areas of patagium, both between the digits and between digit V and the body wall, were continually plucked by the mouth. Along the arms and the individual digits, however, plucking was not performed; instead these portions were run through the lips, the mouth moving outwards towards the finger tips. The pubic region of the body and the interfemoral membrane were probably cleaned by the mouth, as the muzzle was frequently thrust into this region. The bat was watched in dim torchlight for about ten minutes, during most of which time the wings were being cleaned. All this time the bat hung by its left foot only, often rotating considerably. Suddenly it dropped from its perch and flew away.—OWEN GILBERT, *The Nature Conservancy, Merlewood Research Station, Grange-over-Sands, Lancs.*

THE GENERA *CHAETOSPHAERIA* AND *THAXTERIA* IN BRITAIN

C. BOOTH

Commonwealth Mycological Institute

THE genus *Chaetosphaeria* is redescribed and a key and descriptions given to the British species. *Chaetosphaeria phaeostroma* and *C. fusca* are transferred to the genus *Thaxteria*.

CHAETOSPHAERIA Tul. Selecta Fung. Carp. 11, p. 252, 1863.

The ascocarp is a true perithecium with an ostiole formed early in development at the apex of a short papilla. The perithecia develop directly on the surface of wood or on a thin superficial pseudoparenchymatous stroma. They are black, shining, carbonaceous and smooth to slightly verrucose. The paraphyses and apically free paraphyses form before the development of the asci. The asci are unitunicate, fasciculate and clavate with a thin wall slightly thickened at the apex. The ascospores are obliquely monostichous to distichous, hyaline, cylindrical to broadly fusoid with a delayed formation of septa.

The macroconidiophores consist of a simple stipe with a single apical phialide or, if the apex is branched, then each branch terminates in a single phialide. Conidia are formed endogenously and in basipetal succession.

Tulasne proposed the genus *Chaetosphaeria* for the single species *Chaetosphaeria innumera*, with sessile globose papillate perithecia developing directly on the surface of the substratum amongst a forest of erect conidiophores, and with hyaline ascospores.

In 1870, Fuckel transferred *Sphaeria phaeostroma* Mont. to *Chaetosphaeria* and also described *Chaetosphaeria fusca* as new, citing his own exsiccata Fungi Rhen. 2040 and 2041 as authentic for *Chaetosphaeria phaeostroma* and *C. fusca* respectively. The specimens under these numbers in Herb. R.B.G. Kew have turbinate (not globose) perithecia with a vestigial ostiole and have developed in a loose byssus of brown hyphae. The upper half of each contains the ascigerous cavity, and the lower half remains a solid sterile inverted cone. The ascospores are 3-septate, their two central cells becoming dark brown, and their end cells remain hyaline. These characters do not agree with those of the original species of *Chaetosphaeria* but do agree with those of the two species to which *Thaxteria* Sacc. is restricted by Fitzpatrick (1923) in his Monograph of the Nitschkieae. *Chaetosphaeria phaeostroma* and *C. fusca* are therefore transferred below as *Thaxteria phaeostroma* and *T. fusca* respectively.

Key to the British species of *Chaetosphaeria*

A. Perithecia formed amongst conidiophores with wedge-shaped conidia

1. Ascospores 5-7 by 2.5-3 μ ; conidia arising within the phialide not more than 4 μ below the top of the collarette *C. myriocarpa*
2. Ascospores 7-10 by 2.2-5 μ ; conidia arising within the phialide 7-12 μ below the tip of the collarette *C. bramleyi*
3. Ascospores 12-17 by 3.5-4 μ *C. innumera*
4. Ascospores 17-28 by 4-5 μ *C. cupulifera*

B. Perithecia formed amongst conidiophores with fusoid to falcate conidia

5. Ascospores 12-17 by 3.5-4 μ *C. callimorpha*
6. Ascospores 18-22 by 3.5-4 μ *C. pulviscula*

Chaetosphaeria innumera Tul. Selecta Fungorum Carp., ii, p. 252, 1863.

[*Sphaeria innumera* Berk. & Br. in Berkeley's Outl. Brit. Fung., p. 395, 1860 nomen nudum.]

Lasiosphaeria innumera (Tul.) Stevenson, Mycologia Scotica, p. 391, 1879.

Byssosphaeria innumera (Tul.) Cooke, Grevillea, xv, p. 123, 1887.

Perithecia 160-190 \times 150-190 μ , smooth, black, carbonaceous with short conical ostiolar papilla; outer region of wall 18-20 μ , cells thick walled dark, 14-18 \times 4-5 μ , inner region 6-8 μ , cells compressed hyaline 8-18 \times 3 μ ; asci 60-80 \times 6-7 μ cylindrical to sub-clavate; ascospores 12-17 \times 3-4 μ , monostichous or subdistichous, hyaline, 1-septate, elliptical to fusoid.

Conidiophores $110-150 \times 5-8\mu$ erect, flexuous to straight, septate subulate, dark brown but paler towards the single apical phialide which measures $10-18 \times 3-4\mu$; conidia $3.5-5 \times 2-3\mu$ hyaline, oval to ovoid, produced in basipetal succession from the end of the phialide.

The conidiophores form sparse, but often widespread patches on the periderm or decorticated wood of deciduous trees on the ground. Perithecia develop amongst the conidiophores and have not been seen except associated with the latter.

Type coll. *Sphaeria innumera* Berk. & Br., Batheaston, Dec. 1858, coll. C. E. Broome, In Herb. B.M. (Nat. Hist.)

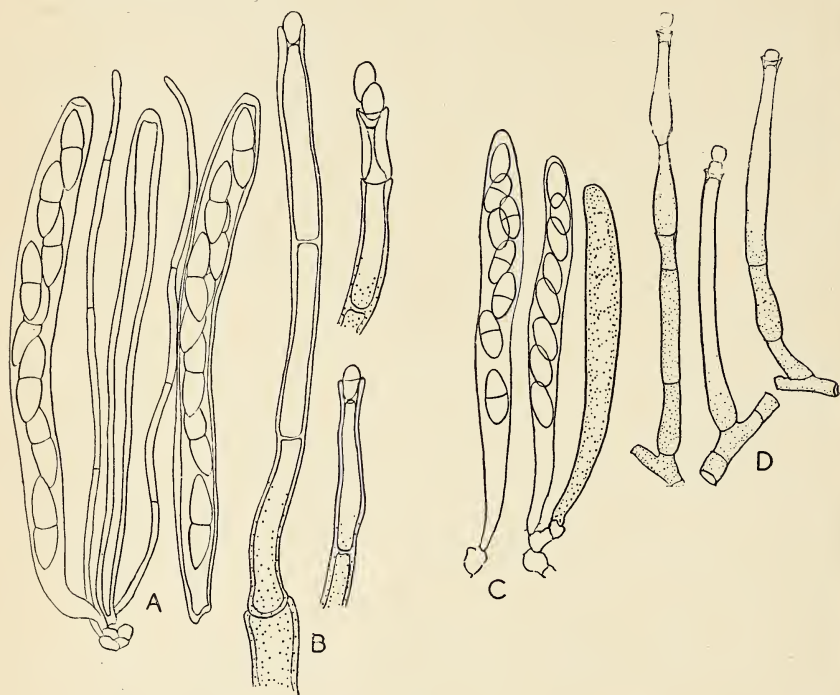


FIG. 1.

Asci and conidiophores: A-B, *Chaetosphaeria innumera*: C-D, *Chaetosphaeria myriocarpa*. $\times 1000$.

Chaetosphaeria myriocarpa (Fr.) Booth C.M.I. Mycol. pap. No. 68, p. 5, 1957.

Sphaeria myriocarpa Fr., Syst. Mycol., ii, pt. 2, p. 459, 1823.

Trichosphaeria myriocarpa (Fr.) Petr. & Syd., Ann. mycol. Berl., xxii, p. 330, 1924.

Coniothyrium myriocarpum (Fr.) Sacc., Syll. Fung., iii, p. 315, 1884.

Wallrothiella minima (Fuckel) Sacc., Syll. Fung., i, p. 455, 1882.

Trichosphaeria minima (Fuckel) Wint., Rab. Krypt. Fl. 2 Aufl. 1 (Pilze), 2, p. 204, 1887.

Psilosphaeria minima (Fuckel) Cooke, Grevillea, xvi, p. 50, 1887.

Sphaeria ostioloidea Cooke, Grevillea, iv, p. 113, 1876.

Psilosphaeria ostioloidea Cooke, Grevillea, vii, p. 84, 1879.

Zignoella ostioloidea (Cooke) Sacc., Syll. Fung., ii, p. 104, 1883.

Catenularia heimii Mangenot, Rech. Meth. Champ., p. 25, 1952.

Perithecia $110-155\mu$, black, globose, superficial scattered or gregarious occasionally becoming confluent; outer wall carbonaceous, brittle, $22-28\mu$, inner layer of hyaline cells $2-4 \times 1-2\mu$; asci cylindrical $40-55 \times 5-6\mu$; ascospores monostichous, hyaline, oblong or shortly cylindrical, continuous becoming 1-septate $5-7 \times 2\frac{1}{2}-3\mu$. Conidiophores $40-80 \times 3-4\mu$, basal swelling $6-10\mu$ dia, erect, dark brown, occasionally branched, 3-5 septate and paler towards the terminal hyaline phialide which measure

14–30 × 3–4 μ ; conidia hyaline, wedge-shaped to globose, 1½–2 × 2–2½ μ . A common species on the periderm, decorticated wood of many deciduous trees and on the effete stromata of *Hypoxylon*, *Diatrype* and *Diatrypella* spp.
Type coll. *Sphaeria myriocarpa* Fries Scler. Suec. No. 313.

***Chaetosphaeria bramleyi* spec. nov.**

The black perithecia develop on the surface of the wood and are sparsely dispersed in a web of conidiophores. In the type collection the latter form patches up to 10 cm. long on decorticated branches of *Rosa* sp. Coloniae effusae, velutinae, citro

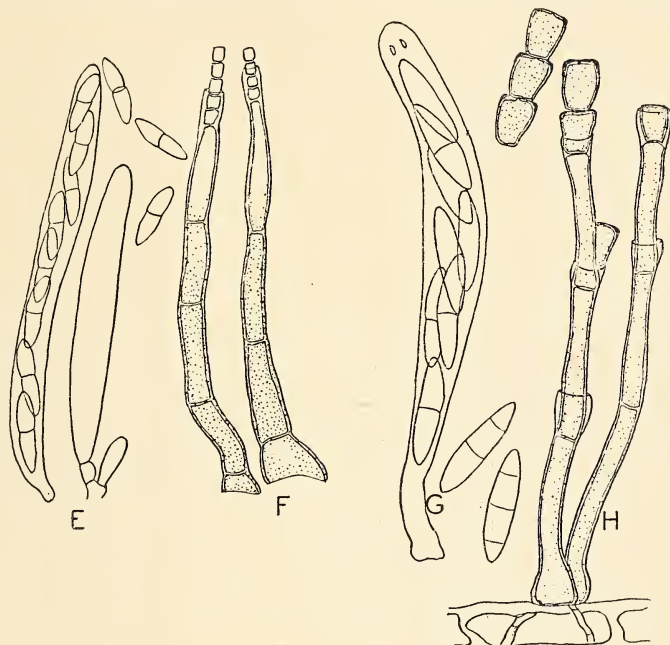


FIG. 2

Asci and conidiophores: E-F, *Chaetosphaeria bramleyi*; G-H, *Chaetosphaeria cupulifera*.
E-G $\times 1000$, H $\times 500$.

fuscae. *Perithecia* inter conidiophora erecta nidulantia numerosa, nigra, nitidula, globosa, verrucosa, papillata 140–200 μ ; paries 16–22 μ crassus. *Asci* unitunicati, cylindraceo-clavati, octospori, subsessiles, 40–56 × 4–6 μ . *Sporae* monostichae ad sub-distichae, oblongo-fusoideae, 1-septatae, hyalinae, 7–10 × 2–2½ μ . *Conidiophora* erecta, simplicia, olivaceo-fusca 25–135 × 4 μ apice phialidem singulam pallidiorem 20–30 × 2–3 μ gerentia. *Conidia* intra apicem phialidia catenulatim formata, hyalina, cuneiformia 1½–2½ × 1–1½ μ .

Hab. in foliis *Rosa* spec., Whitcliffe wood, Richmond, Yorks, W. G. Bramley. Herb. I.M.I. 67848.

The black verrucose perithecia measure 140–200 μ in diameter are flattened-globose with a central ostiolar papilla. The wall which measures 16–22 μ thick, has two layers, an outer of thick walled cells 4–6 μ dia., the lumen of which become almost occluded, and an inner, 7–8 μ thick, of hyaline, compressed thin walled cells, 8–10 × 1½–2 μ .

The paraphyses and periphyses develop before the asci, but the paraphyses tend to disintegrate as the latter mature.

The asci are 40–56 × 4–6 μ , unitunicate, cylindrical with a rounded apex.

The eight ascospores are obliquely monostichous to sub-distichous hyaline ellipsoid to navicular 7–10 × 2–2½ μ with a single central septum.

Conidiophores which arise from a basal cell $8-11\mu$ in diameter are dark brown, erect, flexuous, $25-135 \times 4\mu$ at the base narrowing to $2-2\frac{1}{2}\mu$ at the apex where they end in a phialide $20-30 \times 2-3\mu$. Conidia are formed in basipetal succession $7-12\mu$ from the apex of the phialide (a marked difference from *Chaetosphaeria myriocarpa*) and remain in chains; they are hyaline, $1\frac{1}{2}-2\frac{1}{2} \times 1-1\frac{1}{2}\mu$, wedge-shaped and surrounded by mucilage.

Six single ascospores were isolated and placed on malt agar in tubes. Growth was slow and after four months had formed a black erumpent mass 1 cm. in diameter that was composed partially of pseudoparenchyma and partially of loose hyphae. The surface was covered with conidiophores. A black discoloration of the agar extended for $2\frac{1}{2}$ cm. down the tube. Although growth was slow the first conidiophores developed after 15 days, they were identical with those on the host except that they arose direct from the hyphae and not from a foot cell. In the older cultures the conidiophores showed many proliferations, formed when the conidiophore resumed growth from the meristematic region within the phialides and grew out through the tip to form a further phialide at a higher level. Conidia from culture were identical with those formed on the natural substratum.

Type coll. on *Rosa* sp. Whitcliffe wood, Richmond, Yorks., W. G. Bramley, October, 1956, I.M.I. 67848.

Chaetosphaeria cupulifera (Berk. & Br.) Sacc. Syll. Fung. II, p. 94, 1883.

Sphaeria cupulifera Berk. & Br., Notices of Brit. Fung. no. 1333, in *Ann. Mag. Nat. Hist.* ser. 4, VII, 1871.

Lasiosphaeria cupulifera Cooke & Plowright, *Grevillea* VII, p. 85, 1879.

Catenularia cuneiformis (Richon) Mason, Mycol. Pap. 5, p. 121, 1941.

Perithecia $150-220\mu$ in diameter, black, verrucose, globose; wall of two layers, the outer $22-24\mu$ thick with black carbonaceous cells $3-5\mu$, the inner 10μ thick; of hyaline compressed cells $10-11 \times 2-2\frac{1}{2}\mu$; asci cylindrical $80-120 \times 9-10\mu$; ascospores distichous, hyaline, ellipsoid to allantoid, finally 4-5 septate, $15-28 \times 4-5\mu$.

Conidiophores arising from foot cell $9-11\mu$ in diameter from the substratum or from the wall of the perithecium. They are erect, flexuous, dark brown, occasionally branched 200μ high by $6-7\mu$ broad at the apex and 8μ at the base, by subsequent proliferations up to 400μ high; Conidia cuneate, yellow-brown, $10-15 \times 8-11\mu$.

Perithecia develop in close association with the conidiophores on the decorticated and decayed wood of many deciduous trees.

The writer has not obtained fresh perithecial material of this species from which the ascospores could be cultured and attempts to grow the conidia have failed. Apart from the similarity of the conidiophores and perithecia with those of the three species previously described; further evidence for their relationship as different states in the life history of the same fungus was obtained from sections of perithecia with conidiophores developing from the wall. These sections showed that the conidiophores developed from a modified outer cell of the wall. They also arise from hyphae at the base of the perithecium which arise directly from the perithecial wall.

MATERIAL EXAMINED

Berkeley and Broome (1871) mentioned two collections when they described *Sphaeria cupulifera*. The first was on elm roots, Langridge, 16th April, 1869. Two parts of this collection have been examined by the writer. The part in Herb. R.B.G. Kew has the conidial state only, but the part in the Brit. Mus. (Nat. Hist.) has perithecia. This is taken as the type collection. The second collection mentioned by Berkeley and Broome has not been traced.

Other collections examined are as follows: On *Fagus*, Ranmore Common, Surrey, S. J. Hughes, February, June 1948 (23533 b & 29343 c). On *Fraxinus*, Hackfall, Yorks., S. J. Hughes, April 1950 (40550 a); Ranmore Common, Surrey, M. B. Ellis, July 1946 (13222 a). On *Quercus*, Mulgrave Woods, Yorks., S. J. Hughes, Sept. 1946 (6971 b).

CONIDIAL ONLY: On *Fagus*, Ranmore Common, Surrey, S. J. Hughes, February 1952 (49478). On *Fraxinus*, Wauldby Green, E. Yorks., J. Webster, June 1948 (29313). On *Hedera*, Nantoes Estate, nr. Aberystwyth, S. J. Hughes, March, 1948 (27724). On *Ilex*, Ranmore Common, Surrey, C. Booth, Dec. 1954 (58777).

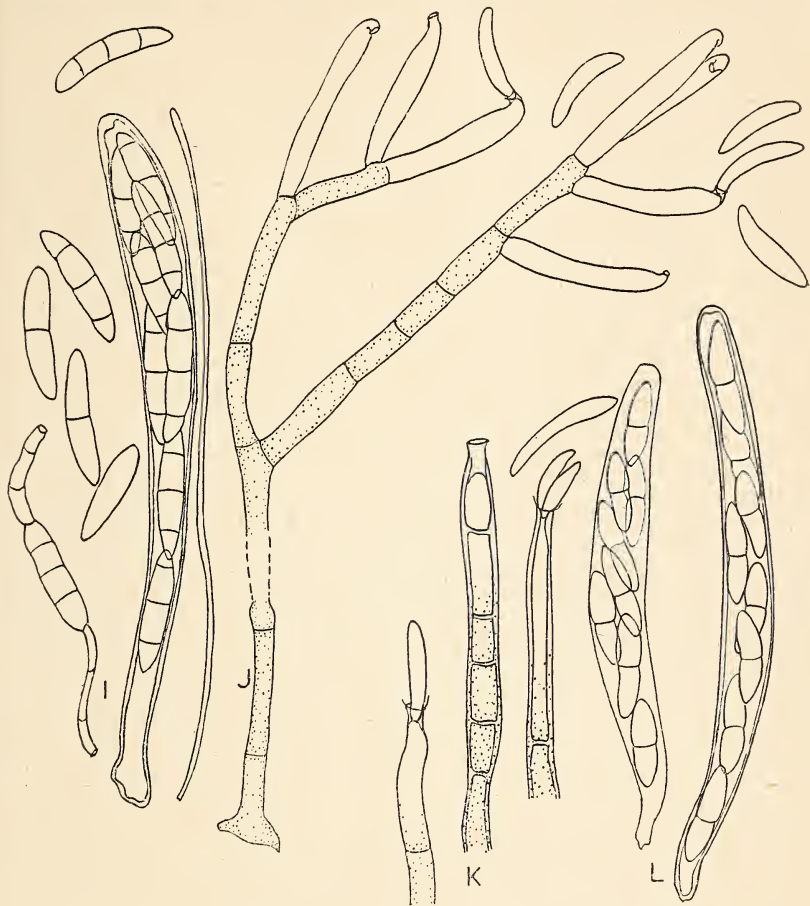
Chaetosphaeria callimorpha* (Mont.) Sacc., Syll. Fung., ii, p. 95, 1883.Sphaeria callimorpha* Mont., *Ann. des. Sc. Nat.*, ser. ii, vol. i, p. 306, 1834.*S. ruborum* Libert, *Plant. Crypt.*, Fasc., IV, No. 340, 1837.*S. rubicola* Currey, *Trans. Linn. Soc. Lond.*, xxii, p. 319, 1859.*Melanopsamma ruborum* (Lib.) Sacc., *Michelia*, ii, p. 58, 1880.

FIG. 3

Asci and conidiophores: I-J, *Chaetosphaeria pulviscula*: K-L, *Chaetosphaeria callimorpha*. $\times 1000$.

Byssosphaeria callimorpha (Mont.) Cooke, *Grevillea*, XV, p. 123, 1887.*Lasiosphaeria ruborum* (Lib.) Stevenson, *Mycologia Scotica*, p. 391, 1879.*L. callimorpha* (Mont.) Stevenson, *Mycologia Scotica*, p. 391, 1879.

Perithecia 125–200 μ , black, globose, verrucose, superficial, solitary to gregarious occasionally coalesced; wall 16–20 μ , outer cells 4–6 \times 3–4 μ without thick carbonaceous walls, inner wall 5–6 μ of thin walled compressed hyaline cells; asci cylindrical, 65–80 \times 7–8½ μ ; ascospores 12–15 \times 3.5–4 μ hyaline, guttulate fusoid becoming constricted at the central septum.

Conidiophores dark brown, erect, unbranched 70–300 \times 5–8 μ , with foot cell 8–10 μ in diameter and single sub-hyaline, apical phialide 20–30 \times 5 μ ; conidia 10–16 \times 2–2½ μ , hyaline, falcate, continuous becoming 1–3 septate.

On *Rubus* and *Quercus* spp.

All collections examined show perithecia dispersed amongst the conidiophores. On *Rubus*, both develop in the first year after the death of the stem and the colonies form velvety patches up to 5 cm. long which surround the stem near the base.

There are two collections in Herb. R.B.G., Kew, that were sent to Berkeley by Montagne; one from the Ardennes, and the other from Meudon. These are the localities mentioned in Montagne's description of this species, and these collections are taken as authentic for the name.

Chaetosphaeria pulviscula (Curr.) Booth, Mycol. pap. No. 68, p. 10, 1957.

Sphaeria pulviscula Currey, Trans. Linn. Soc. Lond., xxii, p. 320, 1859.

Zignoella pulviscula (Curr.) Sacc., Michelia, 1, p. 346, 1878.

Psilosphaeria pulviscula (Curr.) Stevenson, Mycologia Scotica, p. 387, 1879.

Melanomma pulvisculum (Currey) Massee & Cross., Fung. Flora, Yorks., IV, p. 229, 1905.

[*Menispora caesia* Preuss Linnea XXIV, p. 119, 1851, authentic material not seen.]

Perithecia black, globose, 150–250 μ in diameter, lower basal wall 15–20 μ , lateral wall 24–30 μ , asci clavate 90–110 \times 7–9 μ ; ascospores usually monostichous, hyaline, navicular, 18–22 \times 3½–4 μ , hyaline, becoming 3-septate. Conidiophores erect, apically branched, length variable up to 350 \times 3.5–4.5 μ , apical branches end in hyaline phialide 24–30 \times 4–5 μ , tip of phialide forms collarette directed forwards or reflexed over side of phialide; conidia hyaline, continuous, straight or curved, apical end pointed, basal end rounded, 14–20 \times 3–4 μ ; sterile, erect, dark brown hyphae 400 \times 3.5–4 μ associated with the conidiophores.

Conidiophores often found forming downy patches on the surface of partly rotted wood before the perithecia have developed. The latter may develop away from the conidiophores or amongst them after they have ceased to produce conidia and become effete.

Type coll. *Sphaeria pulviscula* Weybridge, Oct. 1857, in Herb. R.B.G., Kew.

OTHER RECORDS OF BRITISH SPECIES AS CHAETOSPHAERIA.

Massee (*Grevillea* 16, 361, 1887) transferred *Helminthosphaeria clavariarum* (Tul.) Fuckel to *Chaetosphaeria* as *C. clavariarum* (Tul.) Massee. This species has dark amerospores and is not a *Chaetosphaeria*; Kirschstein (*Trans. Brit. mycol. Soc.* 18, 305, 1933) considered it to be allied to the *Coniochaeta* section of *Rosellinia*.

Massee, also in 1887, and Cooke (*Grevillea* 16, 36, 1887) recorded *Chaetosphaeria pileoferruginea* Crouan for Britain. These records were based on a collection from Carlisle on the stems and roots of *Calluna* by Dr. Carlyle; part of this collection is in Herb. R.B.G. Kew and part in the Brit. Mus. (Nat. Hist.). Examination of this material shows it to be identical with *Herpotrichia macrotricha* (Berk. & Br.) Sacc., a member of the Pseudosphaeriales. The type material of this species now in the British Museum (Nat. Hist.) has been used to make the comparison.

THAXTERIA Saccardo. Syll. Fung. 9, p. 687, 1891. Revised Fitzpatrick, Mycologia 15, p. 58, 1923.

Perithecia superficial, scattered to densely crowded, and associated with or seated upon a byssus of metallic hyphae, they are turbinate to clavate, coriaceous, ostiolate, the terminal broadened portion containing the sub-spheric ascigerous cavity, the lower stalked portion solid, and frequently fused with the bases of neighbouring perithecia to form a common pseudoparenchymatous stroma; at maturity, or on drying collapsing vertically to cupulate, or laterally shrunken or remaining spherical according to the species; asci thin-walled, slender, clavate 8-spored; spores broadly allantoid, at first hyaline, finally dark brown with three transverse septa.

The type species is *Thaxteria didyma* (Speg.) Sacc. Fitzpatrick cited wrongly *Coelosphaeria leptosporoides* Wint. as the type species. Hansford (*Proc. Linn. Soc. N.S.W.*, 81, 29, 1956) said that this was a later name for *Sphaeria archerii* Berk. & Br.

Thaxteria phaeostroma (Dur. et Mont.) Booth comb. nov.

Sphaeria phaeostroma Dur. et Mont. F. Alg., 1, p. 491, 1846.

Chaetosphaeria phaeostroma (Dur. et Mont.) Fuckel, Symb. Mycol., p. 166, 1870.

Cladotrichum triseptatum Berk. & Br., Ann. & Mag. Nat. Hist. Ser. 2, p. 98, No. 511, 1851.

Perithecia $280\text{--}350\mu$ in diameter by $400\text{--}500\mu$ high, black, superficial, on or associated with a byssus of brown hyphae $6\text{--}8\mu$ broad, scattered or densely crowded, pyriform to turbinate, carbonaceous-coriaceous, ostiole vestigial; enclosing an ascigerous cavity in its upper half, its lateral wall $25\text{--}30\mu$ of two layers, the outer layer $20\text{--}25\mu$ thick, which also forms the solid obconic base, is composed of thick walled cells $7\text{--}10\mu$ in diameter; the inner wall consists of several layers of compressed hyaline cells. Asci $110\text{--}120 \times 15\text{--}17\mu$, clavate, thin walled, spores distichous. Ascospores $32\text{--}36 \times 6\text{--}9\mu$ broadly allantoid hyaline finally 3-septate, the two larger central cells becoming dark brown.

The associated conidiophores are interspersed with sterile concolourous pointed setae $250\text{--}380 \times 8\mu$. The conidiophores are $300\text{--}400 \times 7\text{--}10\mu$ dichotomously branched with intercalary and terminal sub-sphaerical to broadly clavate ampullae $14\text{--}16\mu$ in diameter. Conidia are produced from small pores on the ampullae, they are solitary blastospores and are at first continuous to 1-septate, sub-hyaline to pale brown, later becoming 3-septate $20\text{--}30 \times 10\text{--}15\mu$ oval to cylindrical, the two central cells are darker than the end cells; a marked basal scar is present on each discharged conidium.

The conidiophores form black shining velvety patches in young colonies, but as



FIG. 4

Asci and conidiophores: M-N, *Thaxteria fusca*: O-P, *Thaxteria phaeostroma*. $\times 500$.

the surface is covered by the development of perithecia the colony becomes dull in appearance. In over fifty collections examined all the colonies were growing over, or associated with effete sphaeriaceous fungi, most commonly *Diatrype stigma*.

The conidiophores which have been named *Cladotrichum triseptatum* are undoubtedly the conidial state of *Thaxteria phaeostroma* but it has not been possible to confirm this by cultural studies. The ascospores from ten fresh collections have been subjected to germination tests in water and on agar. In water a short hypha has developed from the terminal cells of some of the spores but this could not be induced to continue growth. Using agar as a substrate the spores have been subjected to a temperature range from $20\text{--}45^\circ\text{C}$. but without success. This was also the case when the spores were placed on a concoction made from agar and the ground fungal stroma of *Diatrype stigma*. However, 10μ sections through the colony show that the conidiophores and perithecia develop from the same byssus and that the same hypha maybe associated with both.

MATERIAL EXAMINED.

Chaetosphaeria phaeostroma folder in Herb. R.B.G. Kew.

Fuckel's Fungi Rhenani 2040; Rabenhorst, Fungi europaei 51; Vize, Microfungi Britannici 171.

Cladotrichum triseptatum *folder* Herb. R.B.G. Kew.

Cladotrichum triseptatum Berk. & Br. Kingscliffe (Scripsit Berk.).

Cladotrichum triseptatum Berk. Morkay Lawn, July 1848 (Scripsit Berk.).

Chaetosphaeria phaeostroma *folder* Herb. I.M.I.

One collection only is cited from each host although over sixty collections are present in the herbarium.

On *Acer*, Masham, Yorks., S. J. Hughes, Sept. 1948 (31415).

On *Corylus*, Fountains Abbey, Yorks., C. Booth, April 1954 (56554).

On *Fagus*, Ranmore Common, Surrey, C. Booth, Nov. 1955 (60978 c).

On *Fraxinus*, Exeter, S. J. Hughes, Sept. 1947 (19040 a).

On *Hedera*, Mulgrave woods, Yorks., M. B. Ellis, Sept. 1946 (7472).

On *Ilex*, Moccas Park, Hereford, S. J. Hughes, Sept. 1951 (47020).

On *Prunus* Aberystwyth, S. J. Hughes, March 1948 (27747).

On *Ribes*, Wheatfen broad, Norfolk, E. A. Ellis, March 1948 (26808).

On *Salix*, Mulgrave Woods, Yorks., M. B. Ellis, Sept. 1946 (6878).

On *Tilia*, St. Mary, Wiltshire, T. W. Duncan, Dec. 1945 (2059).

On *Ulmus*, Ranmore Common, Surrey, S. J. Hughes, Jan. 1949 (33717).

***Thaxteria fusca* (Fuckel) Booth, nov. comb.**

Chaetosphaeria fusca Fuckel, Symb. Myc., p. 166, 1870.

Gongylocadium atrum (Link) Wallr., Fl. Crypt. Germaniae II, p. 160, 1833.

Oedemium atrum Link, Linne's Species Plantarum VI, pt. 1, p. 42, 1824.

Cladotrichum scyphophorum Corda, Pracht. Flora Europaeischer Schimmelpildungen, p. 47, 1839.

This species has been collected in Britain only in its conidial state. The following description of the perithecia has been based on the type material.

Perithecia 240–280 μ in diameter by 400 μ high, obconic to pyriform carbonaceous-coriaceous, ostiole vestigial, agiceros cavity confined to upper half, lateral wall 34–36 μ consists of two layers, outer 30 μ with thick walled cells, the outer cells of this layer are globose 6–8 μ in diameter and the inner, which are compressed, 8–10 \times 4–5 μ . The inner region of the wall is 5–7 μ and composed of thin walled compressed hyaline cells. The sterile obconic base is composed of longitudinally fused hyphae. Asci 75–114 \times 14–16 μ , clavate with eight obliquely monostichous to distichous ascospores. The ascospores are 22–25 \times 8 μ , broadly allantoid to navicular obtuse at both ends hyaline becoming 3-septate and the two large central cells turn brown.

Conidiophores dichotomously branched brown 6–7 μ in diameter. The first conidia formed on a terminal ampulla when the conidiophore is about 100 μ long, as growth continues both terminal and intercalary ampullae 9–12 μ in diameter, are formed and the conidiophore may reach 1 mm or more in length.

The conidia formed from pores in the intercalary and terminal ampullae are blastospores, and may form short chains. The subsequent conidia form in acropetalous succession; not more than two such chains have been seen developing from one ampulla. The conidia are 16–20 \times 11–12 μ with a basal, and if part of chain apical scar, they are oval but centrally constricted and finally become 1-septate, the central region being darker than the two ends.

Conidiophores form a dense brown felt on the surface of wood and the perithecia develop over this felt.

MATERIAL EXAMINED.

Chaetosphaeria fusca *folder* Herb. R.B.G. Kew.

Chaetosphaeria fusca, Fuckel's Fungi Rhen. No. 2041, type.

Cladotrichum scyphophorum *folder* Herb. R.B.G. Kew.

Cladotrichum scyphophorum Corda, Herb. Berk. (Scripsit Corda)

Chaetosphaeria fusca *folder* Herb. I.M.I.

On *Acer*, Guernsey, M. B. & J. P. Ellis, Sept. 1948 (31612). On *Ilex*, Boxhill station, Surrey, S. J. Hughes, Feb. 1946 (4107).

Ex. Herb. Wallroth, Herb. Univ. Strasbourg.

Oedemium atrum Link (on *Tilia*).

NOTES ON DESMIDS OF THE GENUS *STAUSTRUM*II. *STAUSTRUM LEPTODERMUM*, *S. LONGISPINUM*, *S. BRASILIENSE*, *S. SETIGERUM*, *S. CLEVEI* and *S. TOHOPEKALIGENSE*
var. *TRIFURCATUM*

A. J. BROOK

Freshwater Fisheries Laboratory, Pitlochry, Scotland.

S. leptodermum Lund. in *Nova Acta Soc. Sci. Upsal.*, 8, Pl. 3, Fig. 26, 1871 (Figs. 1-3).

There is only one previous record of this desmid for the British Isles, this being from Slewdrum, Aberdeenshire (Roy and Bissett, 1893, p. 239). Recently, however, it has been found in small numbers in the plankton of Loch na Beiste Brice, and Clar Loch, Sutherland, and in considerable amounts in Loch Morlich, Inverness. Basically, the semicells may be regarded as more or less spherical, the sides and apex of each being broadly rounded. In vertical view it would appear that a triangular shape has been implanted on the spherical body by the production of three mamillate processes of variable length, each of which is usually tipped with a characteristic short spine, both spines and processes in side view being directed obliquely upwards. Quite frequently specimens have been found in which these short spines are absent (see Figs. 2 and 3 lower semicells) in which condition the semicells are then indistinguishable from those of *S. subpygmaeum* West (West, 1892) which would thus only seem to be a form of *S. leptodermum*. Additional weight is given to this belief by the fact that both 'species' have the same size range, both have finely punctate cell walls (Fig. 2) and both are frequently enveloped in a wide gelatinous integument (Fig. 3). It is therefore proposed that these two species should be combined, and since *S. leptodermum* was the first to be described, this name should be retained. It is suggested that specimens without spines tipping their processes should be referred to as forma *subpygmaeum* (West) nov. comb of *S. leptodermum*. The var. *subangulatum* West and Carter (1923) of *S. subpygmaeum* must be abandoned.

S. longispinum (Bail.) Arch. in *Pritch. Inf.*, p. 743, 1861 (Figs. 4-6).

This species is of frequent occurrence in the plankton of oligotrophic lakes throughout the British Isles and whilst most of the semicell characters are quite constant, there is a very considerable variation in the length of the pairs of stout spines which normally terminate the very slightly produced angles of the semicells. Most commonly their length is from 15-25 μ though occasionally specimens have been found in which these spines have been as long as 45 μ (Fig. 4). At the other extreme they may be reduced to almost wart-like protuberances of less than 5 μ in length and, moreover, considerable differences in length may be found in adjoining semicells (Fig. 5). Thus the maintenance of the var. *bidentatum* (Witttr.) West and West which is separated from the type species only by the possession of very short spines does not seem warranted.

On occasions (Fig. 6) individuals have been seen in which some or all of the angles of the semicell have been tipped with three spines.

S. brasiliense Nordst. in *Vidensk. Medd. Dansk Naturh. Foren. Kbh.*, Nos. 14-15, p. 227, Pl. 4, Fig. 39, 1869 (Figs. 7-9).

Only the var. *lundellii* West and West of this large planktonic desmid has been previously recorded from Britain though it often occurs in abundance in oligotrophic lakes. In a plankton sample from Loch Morlich, Inverness-shire, however, many specimens have been found which must be referred to the species, being four-angled in vertical view, the angles terminating typically in three stout diverging spines. In occasional specimens, four spines have been observed at some or all of the angles (Fig. 7) caused by the duplication of the middle, upwardly directed spines. In other specimens, some of the spines may be bi- or even tri-furcate (Fig. 8). The sides of the cells were less concave and the angles not so prominently produced as in the specimens figured by Nordstedt and therefore had a more square and robust appearance.

In accordance with Teiling's valuable proposals (1950) concerning the nomenclature of those desmid species which show diversity in their radiation, pentagonal forms, previously referred to as the var. *lundellii*, should now be named *S. brasiliense* facies *lundellii*. Such forms occurred as frequently as the type species in Loch

FIG. 1

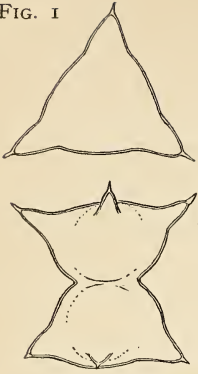


FIG. 2

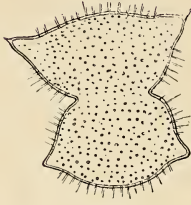


FIG. 3

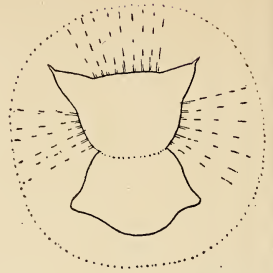


FIG. 4

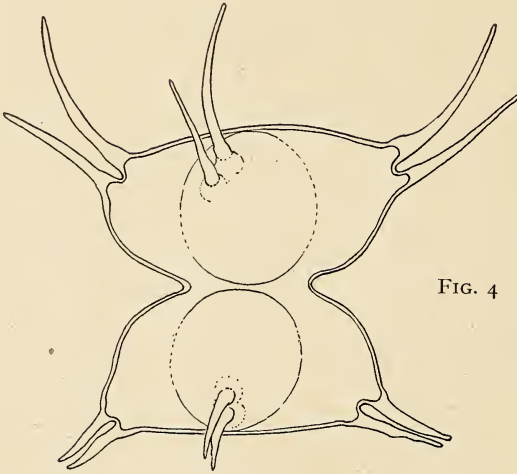


FIG. 5

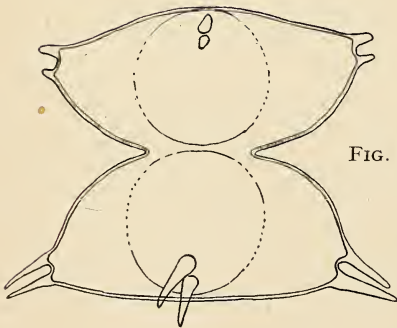
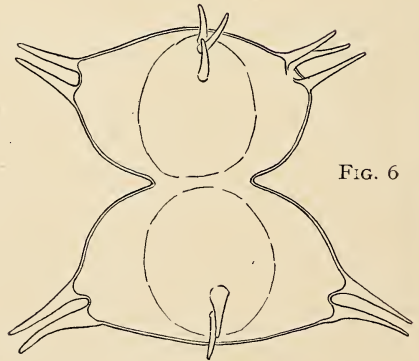


FIG. 6

FIG. 1-3. *S. leptodermum* Lund. $\times 450$.FIG. 4-6. *S. longispinum* (Bail.) Arch. $\times 450$.

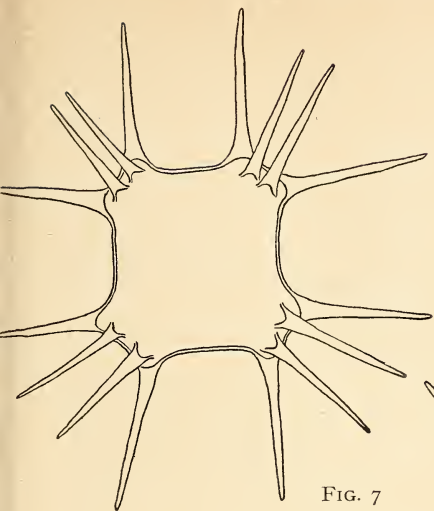


FIG. 7

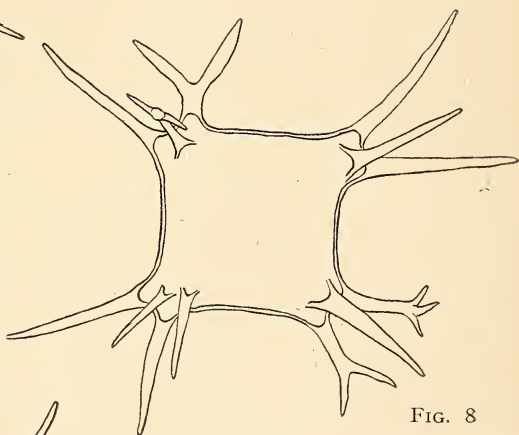


FIG. 8

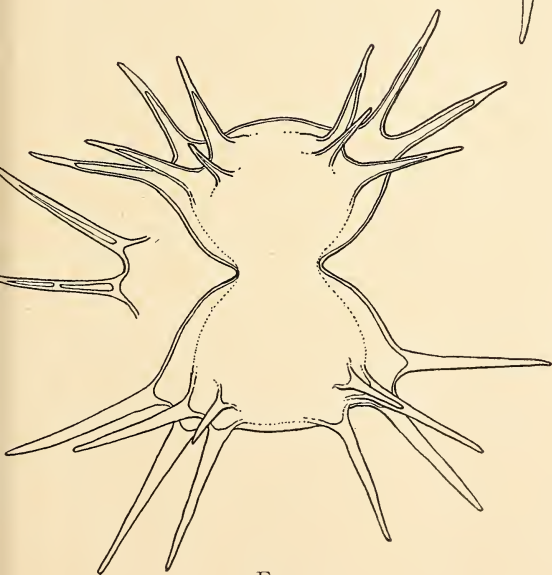


FIG. 9

FIG. 7-9. *S. brasiliense* Nordst. $\times 450$.

Morlich though these again differed from the specimens figured in West and Carter (1923, Pl. 135, Figs. 12-13) in that the sides and apices of the semicells were distinctly convex instead of being almost straight. In addition, many of the spines were hollow instead of being solid (see upper semicell in Fig. 9).

• *S. setigerum* Cleve in *Ofvers. Vetensk. Acad. Forh., Stockh.*, No. 10, p. 490, Pl. 4, Fig. 4, 1864 (Fig. 10).

The figures depicting this species in West and Carter (1923, Pl. 136, Figs. 13-14) do not represent this species adequately. The most important omission from their figures is that they do not show that the angles of the triradiate semicells are slightly produced as in the case of *S. longispinum* and though they show the angles to be tipped with from two to five (usually three) long, gracefully-tapering spines, they do not indicate that the upper one at each angle is usually longer than the others



FIG. 10

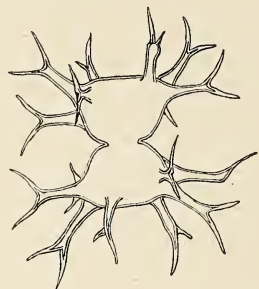
FIG. 10. *S. setigerum* Cleve. $\times 450$.

FIG. 11

FIG. 11. *S. clevei* (Wittr.) Roy and Biss. $\times 450$.

and directed upwards, almost at right angles to the semicell apex which in addition tends to be much less convex than is shown in their figure.

S. clevei (Wittr.) Roy and Biss. in *Ann. Scot Nat. Hist.*, 1893, p. 18, facies *quadriradiata* fac. nov. (Fig. 11).

There appear to be no previous records of quadriradiate forms of this rare plankton desmid, a few specimens of which have now been found in a plankton sample collected in September 1953 by Dr. F. Hustedt from Loch na Achlaise, Perthshire (Hustedt, 1954, p. 272). These quadriradiate forms differ from the typical triradiate forms only in that in vertical view the semicells are quadrate with their sides more or less straight instead of being somewhat convex. As in the species, an apical accessory process arises on the right side of each angle of the semicell, projecting obliquely upwards and forming an angle of 30° with the lower process when viewed vertically (Fig. 11b). Like the lower whorl of processes these accessory processes are deeply bifid their slender spines lying above one another in the same plane. Occasionally some of the processes may be trifid. This fac. *quadriradiata* of

S. clevei could be confused with *S. tohopekaligense* Wolle, from which it is principally distinguished by the possession of only a single, instead of a pair of accessory processes on the apex at each angle.

S. tohopekaligense fac. *trifurcatum* (W. & G. S. West) stat. nov. (=var. *trifurcatum* W. & G. S. West in *Trans. Linn. Soc. Bot.*, 5, p. 80, Pl. 9, Fig. 8, 1895) Fig. 12.

As in the case of *S. brasiliense* var. *lundellii* (see above) the nomenclature of this triradiate form of *S. tohopekaligense* has been modified in accordance with the proposals of Teiling (1950). Like *S. clevei* it is a rare 'Western' type of plankton

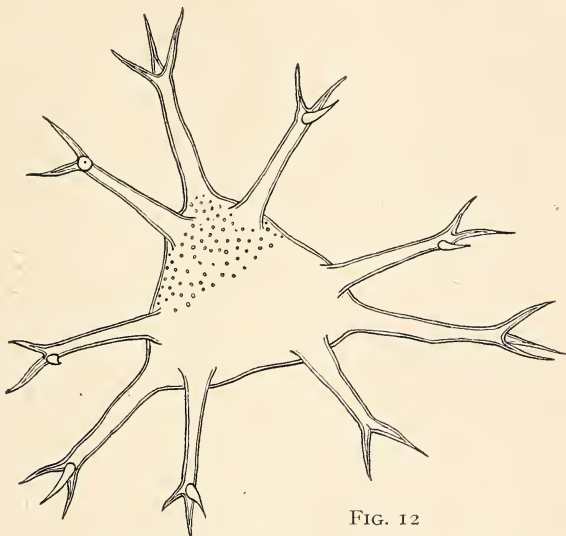


FIG. 12

FIG. 12. *S. tohopekaligense* fac. *trifurcatum* (W. & G. S. West). $\times 800$

desmid and has previously been recorded in Britain from only one locality in Sutherland and one in Lewis. Recently, however, occasional specimens have been found in some lochs in the Trossachs region of Perthshire. In these, both the upper and lower series of processes were longer and more slender than those depicted by West and West (1905, Pl. 7, Fig. 7) from Scottish plankton. Some of the Perthshire specimens were examined under an oil immersion objective and it was observed that the semicell wall, stated in West and Carter (1923, p. 178) to be smooth, was very finely and evenly punctate (Fig. 11).

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 WEST, W. AND WEST, G. S. (1905). A further contribution to the freshwater plankton of the Scottish lochs. *Trans. Roy. Soc. Edin.*, 41, 477-518.

The Life of the Bee, by Maurice Maeterlinck. Pp. 168. Mentor Book, New American Library. 4/-.

A new edition of this well known classic in the translation by Alfred Sutro with an introduction by E. W. Teale. Paper-backed, with unsewn ('perfect') binding, the price is higher than, and the production inferior to, a British Penguin book.

THE BEHAVIOUR OF FALSE-SCORPIONS

J. L. CLOUDSLEY-THOMPSON

On March 7th, 1956, Mr. G. E. Woodroffe, D.S.I.R., Pest Infestation Laboratory, kindly sent me some 20 false-scorpions (*Chelifer cancroides* (L.)) taken from a pigeon loft on a farm near Slough, Bucks. The majority were alive on arrival and were offered clothes-moth (*Tineola biselliella*) larvae as food. Nevertheless, cannibalism accounted for a number of smaller and weaker specimens.

In order to test the responses of these animals to environmental stimuli, a matter that does not appear to have been investigated in any of the Chernetes, a number of simple experiments were made. It was found that the false-scorpions showed marked avoidance of liquid water in which they were easily trapped by surface tension. When immersed, they became motionless and distended within two or three minutes, but recovered when placed on dry filter paper.

The normal choice-chamber apparatus for testing responses to humidity was found to be unsatisfactory with these small, flattened creatures as they tended to secrete themselves in the crevice between the voile floor and the side wall of the arena. A number of experiments were therefore carried out using corked tubes, one end of which contained damp cotton wool, the other calcium chloride crystals to produce dry air. Five false-scorpions were placed in the centre of each tube, separated from the damp wool and calcium chloride crystals by plugs of cotton wool. Their positions were noted at intervals of 15 minutes, but no preference for either the dry or the moist end of the tube was detected.

When placed in a tube, one end of which was in diffuse daylight, the other shaded, a marked preference was shown for the darker end.

One of the most important factors in the orientation of the false-scorpion was found to be thigmotaxis. When a piece of sheet zinc measuring 2×4 cm. bent along its longitudinal axis in the form of a V, was placed in the glass container in which they were kept, the animals tended to cling to it in preference to the dry filter paper lining their container. This tendency appeared to be considerably increased when the zinc V was inverted, whether the glass container was in light or in darkness. It appears therefore, that the animals must hang beneath the lower surface of an inclined support in preference to a vertical or horizontal surface, provided that no crevice is available for them to shelter in. They were found to respond markedly to tactile stimuli and to air currents, but not to the vibrations produced by a tuning fork (C. 512).

Although neither adult clothes-moths nor gnats (*Culex* spp.) were eaten, spring-tails (Collembola) were readily devoured. At first it seemed surprising that the false-scorpions should be able to catch such active prey. It was noticed, however, that when a spring-tail touched, by chance, the outstretched claws of a false-scorpion, these were snapped shut so rapidly that the animal had little chance of escape.

Specimens placed in a corked tube in dry air (over calcium chloride) at room temperature, survived for several days. In contrast *Roncus lubricus* L. Koch and *Chthonius ischnocheles* (Herm.), which normally are inhabitants of leaf litter, died after a few hours in similar conditions. *Cheiridium museorum* (Leach) has been known to live in a corked tube, without food or water for 50 days (Cloudsley-Thompson, J. L., 1956, *Ent. mon. Mag.* **92**, 193).

Several species of *Withius subruber* (Sim.) from grain resides in a disused mill at Aldershot were sent to me on December 5th, 1956, by Mr. G. E. Woodroffe. On January 14th, 1957, seven were placed in corked tubes over calcium chloride at room temperature ($18^{\circ} \pm 1^{\circ}$ C) and the duration of their survival noted. The first false-scorpion died on 10th day of the experiment, two more on 14th day, the remainder on 15th, 16th, 21st and 30th days. Cannibalism did not take place and the animals were not supplied with any food.

It is clear that species which normally inhabit warehouses, birds' nests in hollow trees and other dry places can survive for a long time without food or water. In view of their small size, it is obvious that their powers of water retention must be extremely efficient. Others which dwell in leaf litter, under stones and in equally moist places, soon die under such conditions. The relationship between habitat and dependence upon moisture and other environmental factors does not, however, appear to have been systematically investigated in false-scorpions. A summary of present-day knowledge of the biology of these creatures, appears in: Cloudsley-Thompson, J. L. (1958) *Spiders, Scorpions, Centipedes and Mites*, London: Pergamon Press.

SOME ARACHNIDA OF A LANCASHIRE CLOUGH, WITH HABITAT NOTES AND TWO NEW COUNTY RECORDS

D. W. MACKIE

THE present list of Arachnida represents species collected during a series of visits made to Holden Clough in 1955 and 1957. Holden Clough is a small valley lying off the main road between Ashton-under-Lyne and Oldham, and the physical features of this clough have been described in a previous paper on Tipulidae by L. N. Kidd (*Naturalist*, 1957, pp. 101-102).

Holden Clough lies at an altitude of approximately 450 feet above sea-level, and there is evidence among the spiders listed, of the persistence of a moorland fauna. Such species as *Tarentula pulverulenta* (Clerk), *Amaurobius atropos* (Walck.), and *Poecilonea globosa* (Wider) are typical spiders of moorland habitats, whilst *Centromerita concinna* (Thorell), *C. bicolor* (Blackwall), *Bolyphantes luteolus* (Blackwall) and *Lepthyphantes pallidus* (O.P.C.) all frequent high ground regularly.

This clough, with its scantily wooded slopes covered in rank vegetation and leaf litter, is rich in Linyphiid species of spiders, some 68 per cent. of the present list belonging to this family. Near the railway embankment end of the clough, where the grass is less dense under the trees, sifting among the grass roots and leaf litter revealed many Linyphiids, the dominant species being *Lepthyphantes tenuis* (Blackwall) and *L. zimmermanni*, Berktau, with *Centromerita bicolor* (Blackwall) and *Gonatium rubens* (Blackwall) common. During September and October, the grassy slopes are covered by the dew-spangled webs of *Linyphia triangularis* (Clerk), *L. montana* (Clerk) and *Stemonyphantes lineatus* (L.).

Farther up the clough, where the ground steepens down sharply towards the stream and marshy ground intervenes, the vegetation is lush. Here, deep down at the grass roots, where the surface water collects in every small depression, there is a surprisingly high population of spiders, including such species as *Anistea elegans* (Blackwall), *Oedothorax agrestis* (Blackwall), *Lophomma punctatum* (Blackwall) and *Hilaira excisa* (O.P.C.). The tops of the herbage here carry a large population of *Theridion ovatum* (Clerk), whilst both *Pachygnatha clerki* Sund. and *P. degeeri* Sund. were frequent in the undergrowth.

There are a number of old sycamore trees in the clough and their rough bark scales provide a habitat all the year round for *Ciniflo fenestralis* (Stroem), whilst round the base of these and other tree trunks *Lepthyphantes minutus* (Blackwall), was found along with large numbers of the harvestman, *Oligolophus agrestis* (Meade).

The present list makes no claim to be exhaustive and there is no doubt that concentrated collecting at various times of the year will add very considerably to it. Surrounded as it is by many large industrial areas, Holden Clough probably harbours a large relict invertebrate fauna, thus giving a clue to the past fauna of the area now engulfed by industry.

Two of the spiders on this list, viz. *Oedothorax agrestis* (Blackwall), and *Lepthyphantes tenebricola* (Wider), are recorded as rare in Lancashire (Lancs. & Cheshire Fauna Committee Check List, 1930, *et seq.*) whilst another two, *Hilaira excisa* (O.P.C.), and *Lepthyphantes pallidus* (O.P.C.) are new to the Lancashire faunal area. My thanks are due to Mr. A. E. Le Gros for verifying these four species.

Order ARANAE.

Family Dictynidae.

Ciniflo fenestralis (Stroem) ♀s.

Family Clubionidae.

Clubiona trivialis C.L.K. ♀.

Family Thomisidae.

Xysticus cristatus (Clerk) ♀.

Family Lycosidae.

Lycosa pullata (Clerk) ♀.

L. nigriceps Thorell. ♀.

Tarentula pulverulenta (Clerk) ♀.

Trochosa terricola Thorell. ♀.

Family Agelenidae.

Amaurobius atropos (Walck.) ♀.

Anistea elegans (Blackwall) ♀.

Family Theridiidae.

Theridion ovatum (Clerk) ♀ and ♂.

Family Tetragnathidae.

Pachygnatha clerki Sund. ♀ and ♂.

P. degeeri Sund. ♂s.

Family Argyiopidae.

Meta segmentata (Clerk) ♀ and ♂.

M. segmentata mengeli (Blackwall) ♀.

M. meriamae (Scopoli) ♀.

Family Linyphiidae.

Walckenaera acuminata Blackwall ♀.

Wideria antica (Wider) ♀ and ♂.

Gonatium rubens (Blackwall) ♀s and ♂s.

Family Linyphiidae—cont.

- Maso sundevalli* (Westring) ♀.
Oedothorax agrestis (Blackwall) ♂.
O. retusus (Westring) ♀ and ♂.
Tiso vagans (Blackwall) ♀s.
Monocephalus fuscipes (Blackwall) ♀.
Lophomma punctatum (Blackwall) ♀.
Micrargus herbigradus (Blackwall) ♀s.
Diplocephalus cristatus (Blackwall) ♀ and ♂.
D. latifrons (O.P.C.) ♂.
Araeoncus humilis (Blackwall) ♀.
Erigone dentipalpis (Wider) ♀ and ♂.
Hilaira excisa (O.P.C.) ♀.
Meioneta saxatilis (Blackwall) ♀.
Centromerus sylvaticus (Blackwall) ♀.
Centromerita bicolor (Blackwall) ♀s and ♂s.
Centromerita concinna (Thorell) ♀.
Macrargus rufus (Wider) ♀.
Bathypantes nigrinus (Westring) ♀s and ♂.
Poecilometes globosa (Wider) ♀.
Stemonyphantes lineatus (L.) ♀s and ♂.
Bolyphantes luteolus (Blackwall) ♀ and ♂.
Lepthyphantes minutus (Blackwall) ♀ and ♂.
L. tenuis (Blackwall) ♀s and ♂s.
L. zimmermanni Berktau ♀s and ♂s.
L. tenebricola (Wider) ♀.
L. pallidus (O.P.C.) ♀.
Linyphia triangularis (Clerk) ♀s and ♂.
L. montana (Clerk) ♀ and ♂.
L. clathrata Sund. ♀ and ♂.

Order OPILIONES.

- Oligolophus agrestis* (Meade).
O. tridens (C.L.K.).

Nemastoma lugubre (Muller).

Order PSEUDOSCORPIONES.

Neobisium muscorum (Leach).

An Ecdysis in a Spiny Cricket *Cosmoderus ornatus* Kirby) (Orth., Tetligoniidae).—In early September, 1957, a female West African Spiny Cricket (*Cosmoderus ornatus* Kirby) was found alive in the Bolton Wholesale Fruit Market. Since then I have kept it in a cage 9 in. long, 6 in. wide and 6 in. high, covered with a perforated zinc lid and heated by an electric light bulb, day and night, which keeps the temperature at approximately 100°F. On the floor of the cage are pebbles in which twigs are inserted; in one corner of the cage, cover is provided and here the insect spends much of her time.

A small dish of water keeps the air slightly damp and she has been seen to drink from it. Food consists of a few crumbs of biscuit and scone, but mostly of insects, both dead and alive. Wasps and blue bottles seem most popular and often she takes them from forceps.

For a week she did not eat, then on October 14th I watched her moult, twining her legs around the highest twig in the cage, thus being suspended upside down in the air. Casting must have started at about 1.0 p.m. but I did not discover her condition until 3.30 p.m. By this time she had already freed her head, thorax, abdomen and legs; the ovipositor and antennae were still within the old skin. The head, however, was connected with the old skin by a thin 'thread' but after a series of muscular jerks, when she stretched her legs out to the side, pushed upwards and then quickly relaxed, the 'thread' was broken and the antennae began to work their way free. Slowly they were drawn out, one being freed several minutes before the other. The head was entirely freed of old skin by 4.10 p.m.

During the next half hour, the ovipositor was released and the Cricket, although free of the exuvia, continued to cling to it. Thus it remained suspended, holding itself aloft away from hard ground; it was pinkish in colour with a whitish head and eyes and colourless antennae. At the joints of the legs were little spots of very sticky-looking substance. She remained in this state for a few days. Then, the exocuticle sufficiently hardened, she returned to the ground and proceeded to eat her exuvia.

I was only able to collect the exuviae of one leg, antenna and part of the thorax.

Within a week her body had regained its natural brown colouring, the head had become orange with its characteristic black eyes and orange and black-striped antennae.

Soon after I got the Cricket, 0.3 in. of its left antenna was severed. After the ecdysis, however, both antennae appear to be of equal length.—JOCELYN ROSCOW.

A FUNGUS GALL-MIDGE, *MYCOCECIS OVALIS* EDWARDS (DIPT., CECID.) IN YORKSHIRE

W. D. HINCKS

DURING the spring foray of the Mycological Section of the Yorkshire Naturalists' Union at Thornton-le-Dale, from April 11th-15th, 1957, a member of the party—I very much regret that I cannot now remember who it was—gave me a piece of wood covered with a resupinate fungus in which were a considerable number of blister-like swellings which gave it a strong superficial resemblance to the common beech pyrenomycete *Diatrype disciformis* (Hoffm. ex Fr.) Fr. When opened the swellings did not contain fungal material but instead orange-yellow insect pupae. I had met with similar swellings on a previous visit to Thornton-le-Dale containing larvae which clearly belonged to the Cecidomyiidae (Gall-Midges) but which I failed to rear. On this occasion the adult flies emerged shortly after my return home and the long black hairs with which the body and wings were covered were so striking for members of this family that they were deemed nameable, a rare quality amongst gall-midges except in the hands of a specialist. A number of slides were prepared, all most unsatisfactorily as the long hairs drifted off the insects as soon as they were killed. However attempts to run down the insect with Felt's keys to the family (*N.Y. State Mus. Bull.* 257, 1925) proved abortive and as more urgent tasks intervened the material was forgotten. Recently however, when I again came across the specimens I was once more struck by their biological interest and decided to send the stock tube of adults in alcohol to Dr. H. F. Barnes, the well-known specialist on the family. He was kind enough to identify them as *Mycocecis ovalis* Edwards, a species described in 1922 and apparently not found since, at least Dr. Barnes had not previously seen it. He compared specimens with a cotype of Edwards' and slide-mounted three males (Cecid. nos. 13,649 to 51) and three females (Cecid. nos. 13,652 to 4) for inclusion in the Barnes collection.

Edwards (*Ent. mon. Mag.*, 58: 104-7, 1922), described this new genus and species from three males and three females reared from fungal material apparently identical with mine, collected by Dr. J. Ramsbottom near Haslemere, North Sussex. He subsequently found empty pupal skins at Datchworth, Herts. He described the galls as small blister-like swellings on the surface of the fungus, about 2 mm. in diameter when fully formed, often crowded together, and each containing a single larva. Before emergence the pupa pushes half-way out of the swelling by means of a crack in the periphery so that the cap of the blister easily becomes detached. This description agrees fully with my own material and it may be added that in most cases the pupal skins remain trapped in the cracked blister. The small piece of material which I retained is about two square inches in area and has more than 50 blisters, mostly concentrated in two groups where they are so close as to touch each other. The average length of the blisters is about 2 mm., and they vary slightly in relative breadth, being irregularly ovoid in outline; the top is weakly convex and the sides are noticeably flanged all round, below which the blister cracks when emergence takes place. The appearance of the groups of blisters suggests clusters of small pitch-black bivalve shells, their valves gaping where the pupae have pushed their way out. In most of the blisters the pupal skin is still retained, but in a few instances the top has completely come away, leaving a relatively smooth oval cavity surrounded by the elevated base of the gall.

The host fungus was stated by Edwards, on the authority of Ramsbottom, to be a *Hypochnus* near to *H. fuscus*. The genonym *Hypochnus* Karsten, is no longer used owing to ambiguity and the genus is known as *Tomentella* Patouillard. It is a large genus of resupinate basidiomycetes usually placed in the Thelephoraceae. My fungus agrees well with the macroscopic characters of *T. fusca* (Pers.) Schroet., given by Bourdot and Galzin (*Hyménomycètes de France*: 494, 1928) but I have failed to detect any spores in the small fragments which I can spare from the specimen piece which is being retained to show the form of the gall and the manner of emergence of the adults. The identity of the host fungus cannot therefore be fully established at present, but it is hoped that the discovery of fresh material will enable this to be put beyond doubt.

Although very many insects induce gall-formation on phanerogams very few indeed have been recorded as associated with cryptogams. In the fungi Docters van Leeuwen (*Gallenboek*, 1957) records only three such instances of gall production, by an unknown dipteran on a species of *Conocyme*, by the Phorid fly *Megaselia*

lutescens (Wood) on *Panaeolus* sp., and by the fruit-fly *Drosophila phalerata* Mg. on *Psathyra* sp. The last two flies occur in Britain and *Mycocesis ovalis* Edw. is therefore our third British species to produce fungal malformation comparable with the insect galls of higher plants.

A Key to the British species of freshwater Cladocera with notes on their Ecology, by D. J. Scourfield and J. P. Harding. Pp. 55 with 111 text-figures. Second edition. Freshwater Biological Association. 4/6.

The appearance of this revised edition of Scourfield and Harding's key to the British species of freshwater Cladocera will be welcomed both by those who are interested in the Cladocera as a group and by those who find it necessary to identify these crustaceans during ecological surveys or fishery work.

It is about seventeen years since the key was first issued, and during this period one of the authors (Scourfield) has died and the task of revision has fallen upon Harding, but it is appropriate that some of the revision was necessitated by Scourfield's work on the genus *Daphnia*.

The key itself is fundamentally the same as in the original edition and of its general excellence and clarity one can scarcely speak too highly. Would that all keys were as concise and easy to follow! It is, however, expanded to include three species of *Daphnia* which have either been added to the British list since 1941 or have merited a place as the result of taxonomic revisions. These additions will be of great assistance to those who are anxious to make accurate determinations of their material of this rather difficult genus but who are unfamiliar with or have no easy means of access to the original papers. One wonders, however, why the diagnostic difference between *D. pulex* and *D. obtusa*, discovered by Scourfield, is not employed in the key, and why Scourfield's paper on this subject is not listed in the enlarged bibliography.

The nomenclature of the genus *Bosmina* has been revised to bring it into line with modern ideas, and *Chydorus gibbus*, which was not previously included in the key, has now been incorporated.

There are several departures in format from that followed in the original edition some of which have improved the work, others of which cannot be greeted with such enthusiasm. The placing of the illustrations at strategic points among the text instead of at the end makes for easy reference, usually without turning pages, and the replacement of the key to families by a series of illustrations and notes will perhaps assist beginners to reach more quickly the part of the key they require.

The new method adopted for the numbering of alternative characteristics in the key is less satisfactory than the old, particularly as it does away with the splendid method of drawing the attention of the user to the characteristic in question by the placing of the same number as that employed in the key against that part of the illustration of the organism to which the key refers. This was one of the outstanding features of the original key.

The printing of the characteristic enumerated in almost paragraph form (to save space ?) instead of listing each on a new line as in the previous edition tends to make the key less easy to follow, and the interspersing of the ecological notes throughout the key instead of placing them together at the end gives the whole work a somewhat confused appearance which may have an adverse psychological effect on beginners.

With these reservations—some perhaps due to the conservatism of the reviewer—the new edition can be wholeheartedly recommended.

It so happens that Wagler's work on the Cladocera in *Die Tierwelt Mitteleuropas*, first published in 1937 and for long out of print, has been re-issued almost simultaneously with the British key, thus inviting comparison. While the many illustrations in Wagler, most of them from Lilljeborg's monograph, are excellent (though some of them suffer from excessive reduction in size), the entire work is merely a reprint of the original and is therefore in parts somewhat out of date and misleading. While the text is sound and more detailed than its English counterpart the key, language difficulties apart, is less concise.

Thus, while the serious student will warmly welcome the reappearance of Wagler's work, which deals also with other crustacean groups and which costs £3, the average English enthusiast will even more gladly pay the very modest sum of 4/6 for Scourfield and Harding's well produced booklet.

G.F.

FUNGUS FORAY AT AUSTWICK

September 21st-23rd, 1957

W. G. BRAMLEY

AFTER a period of eight years Austwick and district still provided plenty of material to keep the score or so of members and friends occupied. Climatic conditions were the worst experienced for many years, being cold and wet, though fortunately the rain mostly occurred at night or in the early morning.

Ingleborough Woods were first visited with much speculation amongst the 1949 attenders as to whether that strange agaric, *Collybia racemosa*, would be found again. It was, and in the same small area of ground where it was first found. Soon after entering the woods the discomycete *Galactinia ampelina* with apothecia up to 1.5 cm. across was found growing on bare ground under beech trees. Agarics were frequent but not in any quantity. The remarks made in 1949 about *Amanitopsis* still applied. *Russula nigricans* and its parasite *Nyctalis* which were so abundant in 1949, were lacking, only a few specimens of the former being seen. Boleti and the larger polypores were few in number and this applied to all the districts visited.

A late start on Sunday and heavy rain about noon left little time for Oxenber, where quite a show of *Armillaria* followed the buried roots of felled trees. In contrast with 1949 not a single specimen of *Psalliota* was seen anywhere in the district. After working in the workroom a bright spell tempted a few members out, one party to Langcliffe Wood on the north-west side of Settle, and the other to small woods in the valley.

Monday's excursion was to Pecca Woods above Ingleton, where conditions generally were somewhat barren. A boggy quarry bottom proved more interesting and a number of interesting small agarics were taken. The limestone pastures between the woods and Ingleton proved to be more productive and some of the rarer species of *Hygrophorus* and *Leptonia* were found. Here also four species of Geoglossaceae were found, quite an unusual number.

Pyrenomycetes and Hyphomycetes were scarce, there being little dead wood and conditions did not favour the collecting of the latter. Altogether, some three hundred species were collected, a list of which is being kept by the recorder.

Acknowledgements are gratefully due to Mr. P. D. Orton, without whom the list of agarics would have been much smaller and to Mr. W. D. Graddon, who furnished the list of Discomycetes.

C = Clapham and Ingleborough.

IP = Ingleton, pastures between wood and road.

I = Pecca Woods, Ingleton.

O = Oxenber.

* Not in Mason & Grainger's *Catalogue of Yorkshire Fungi* for V.C. 64.

† Not in Mason & Grainger's *Catalogue of Yorkshire Fungi*.

‡ New to Britain.



Collybia racemosa
Pers. (Fr.). × 2

AGARICALES

Amanita citrina (Schaeff.) Roques, I.

Clitocybe cerrusata Fr., I.

† *C. langei* Singer, I.

C. rivulosa (Pers.) Fr., C.

* *Collybia racemosa* (Pers.) Fr., C.

† *Cortinarius hoeftii* (Weinm.) Fr., C.

† *C. pseudosolor* Lange, I.

† *C. puniceus* Orton, C. (described as new species in *Cortinarius* II).

† *Galera calyptrospora* Kühner, I.

* *G. rubiginosa* (Pers.) Fr., O.

† *Hygrophorus chrysaspis* Metrod, C.

* *H. nigrescens* Quél., O.

† *H. reai* Maire, IP.

* *H. russocoriaceus* Berk. & Miller, O, IP.

† *H. subradiatus* (Schum.) Fr., O., IP.

Laccaria proxima Boud., I.

* *Lactarius tabidus* Fr., I.

AGARICALES—continued

- Lepiota acutesquamosa* (Weinm.) Fr., C. **Marasmius wynnei* B. & Br., C. (= *M. globularis*).
L. bucknalli B. & Br., C. †*Mycena floridula* (Fr.) Quel., I.
†*L. irrorata* Quél., C. **M. speirea* Fr., C.
†*L. sistrata* Fr., C. †*Naucoria subincarnata* Kühn & Romagn.
†*L. subalba* Kühn, C. †*Pholiota filaris* (Fr.) Lange, O.
†*Leptonia catalaunica* Singer, O, IP. **P. muelleri* (Fr.) K. & R. Langcliff
†*L. rosea* Longyear, IP. (= *Entoloma* Wood.
griseo-cyanum Fr. var. *roseum* †*Pluteus hiatus* Romagn., C.
Maire). †*Psathyrella coprobia* Lange, O.
**L. serrulata* (Pers.) Fr., IP. †*Russula mairei* Singer, C.
**Marasmius cohaerens* (A. & S. ex Fr.) †*Tricholoma atro-cinereum* (Pers.) Fr., IP.
Cke. & Quél. (= *M. ceratopus*). †*Tubaria pallidospora* Lge. Langcliff
**M. undatus* Berk., O. Wood.
**M. fusco-purpureus* (Pers.) Fr., C.

DISCOMYCETES

- †*Calycella terrestris* (Boud.) Le Gal. †*Helotium excavatum* Vel., Ribblehead.
Langcliff Wood, Settle. *Microglossum viride* (Pers.) Gill., IP.
†*Corynetes atro-purpureus* (Batsch) Dur. †*Scutellinia stenosperma* Le Gal.
†*Galactinia ampelina* (Quél.) Boud. †*S. trecispora* (B. & Br.) Lamb.
†*Geoglossum cookeianum* Nannf., IP. †*Trichoglossum hirsutum* (Pers.) Boud.,
†*G. nigratum* Cooke, IP. O, IP.

PYRENOMYCETES

- Cordyceps forquignoni* Quél., on flies, C.
**Cucurbitaria laburni* (Pers.) de Not. on Laburnum, C. (C. Booth thinks this is in the perithecial stage with the asci gone.)

The Mushroom Hunter's Field Guide, by **Alexander H. Smith**. Pp. 197, with numerous black and white photographs. The University of Michigan Press, Ann Arbor. 40/-.

This book is an introduction to the study of larger fungi (referred to by the author as 'mushrooms') more especially from the point of view of the mycophagist. The author makes clear that it is not a critical work for identification of species. The introduction includes remarks on fungi in general and the snags and difficulties of their identification with some sound advice on how to collect and to attempt identification of some of the larger fungi. Keys to the fungi included accompany the excellent photographic illustrations with notes on habitat, field characteristics and edibility but no detailed descriptions. The 124 larger fungi included are those most commonly found in western and north-eastern United States.

The chief value of the book for British readers is the well-written and pertinent introduction, since of those fungi included which are British (about eighty-five), some are not common and many of our commonest species are not included. The use of a few terms (such as 'gills adnexed') in a non-European sense is a minor difficulty. P.D.O.

How to Make a Home Nature Museum, by **Vinson Brown**. Pp. 184, with 28 line illustrations. Faber Ltd., London, 1958. 12/6.

This up-to-date book is written chiefly for the young naturalist who feels he must collect out of doors and bring his specimens home for further study and the benefit of others. It is a practical work with excellent drawings in support on how to preserve birds and mammals, shells, insects, and plants; and there are descriptions of moulding and casting in rubber, wax and plastic of forms of life ranging from frogs to fungi. Advice is given on the gathering of rocks and minerals, with suggestions concerning their attractive display.

The importance of making field notes is stressed so that specimens may be provided with full and accurate data; and in support, photographs, paintings, sketches and diagrams are recommended. Altogether, a stimulating guide for the junior nature-enthusiast who takes his hobby seriously.

J.A.

BOOK REVIEWS

Birds on the Spurn Peninsula, by **Ralph Chislett** with the co-operation of George Ainsworth. Part I (General; and *Turdidae* to *Prunella*). Pp. 99. A. Brown & Sons, Ltd., Hull and London. 10/6 net.

The doyen of Yorkshire ornithology is to be congratulated on this book: it is one thing to do field work extensively at a bird observatory; it is another, and very much less pleasant thing to write the results up promptly. Mr. Chislett has wisely chosen to do so after the first eleven years of the Spurn Bird Observatory's work, during which time a valuable accumulation of material has been amassed, but not so much as to become unwieldy and unmanageable. In an introductory chapter an account is given of the history of the Observatory, and of its geography and ecology, with general remarks on trapping and ringing birds. By a coincidence the present reviewer read this book while himself working at an island observatory and found that comparisons between it and Spurn were illuminating and valuable; the great advantage of a mainland observatory is that coverage, especially during the inclement months of March and November, can be more easily arranged. The advantage of an island station seems to be that the picture of bird migration emerges more clearly, not being so confused by coastal movements and the presence of mainland birds. We are pleased to find that, in his account of the day's work, the author (himself a model in this respect) insists on early rising, an essential if migration is to be properly studied. The inclusion of extracts from the log-books is also an admirable feature; these might, to the more solemn-minded, appear superfluous, but they are not only extremely readable, but also present to the reader unacquainted with it the best possible picture of life at an observatory, conveying as nothing else can the atmosphere of expectation followed by excitement that makes the study of bird migration so enthralling.

There follows a list of birds recorded at Spurn, from which, inexplicably, is omitted Blyth's Reed-Warbler *Acrocephalus dumetorum*, an eastern species shot there in 1912, the year in which seven or eight occurred in Britain. Chapter IV is a sensible account of the influence of weather on migration, the description of the Blackbird rush of 6th and 7th November, 1954, with its subsequent ringing recoveries, being of very special interest. The 'meat' of the book is contained in the ensuing chapter, dealing with the numbers of birds ringed and the recoveries: the enormous total of 20,019 birds of 120 species (which argues great enthusiasm and hard work) have been ringed in eleven years and of these 167 (or '83 per cent.) have turned up away from Spurn, more than half of them, it is true, in Britain, but 29 in Scandinavia, 21 in France and smaller numbers in other countries, including two in North Africa.

After a short explanatory list of the rarer birds, this first volume ends with a species by species account of the thrushes, warblers and allied species, together with their occurrences plotted in tabulated form. Why the author should begin with the thrushes (recalling the order used by Dresser and other Victorians) is not quite clear, unless it is because they provide the more interesting recoveries with which it will be useful, in the second volume, to compare those species that have not given such extensive and satisfactory results.

It might be thought that too much detail is included, but this is quite essential when the Spurn results are collated with those from other observatories; we cannot have too much detail. The author modestly concludes: "To have seen something and to have recorded what we saw" has been sufficient for us. Much more evidence will need to be marshalled before "conclusions" can be discussed.' Nevertheless the mass of evidence is wide enough for a number of conclusions, although some of them may be provisional, to be reached, and it is to be hoped that Mr. Chislett may change his mind and attempt some form of summary in his forthcoming volume.

This book is a great triumph for Yorkshire ornithology and a monument to the hard work of many collaborators to whom Mr. Chislett pays generous acknowledgement. But it should never be forgotten that the lion's share, not only of the writing but also of the field work and organisation has been borne by the author himself and his 'co-operator', G. H. Ainsworth, the Secretary of the Observatory. Mr. Chislett has always written well and readably, and part of the charm of his work is the personal note; in reading one can always feel the presence of the author at one's elbow, and feel closely the benefit of his experience and good advice.

M.F.M.M.

British Water Beetles. Vol. 3, by F. Balfour-Browne. Pp. 53 + 210 with 87 figures and 67 maps. Ray Society: sold by Bernard Quaritch Ltd., London, 1958. 30/-.

The completion of his trilogy on *British Water Beetles* (Vol. 1 reviewed by G. B. Walsh, *Nat.* 1940: 142; Vol. 2 by Walsh, *Nat.* 1951: 17) is not only a matter for sincere congratulations to the veteran author, Professor Balfour-Browne, but also an occasion for rejoicing among British coleopterists as the Hydrophilidae, the family covered in Volume 3, has long been in need of critical study. It should be noted that the author adheres strictly to his title, excluding the terrestrial Hydrophilids of the subfamily Sphaeridiinae, but rightly including the three semi-terrestrial species of the otherwise aquatic genus *Helophorus*, sometimes known as 'Turnip Mud Beetles'.

May I say at once how much I enjoyed this book, as I do all of B.B.'s writings. I find it readable and stimulating and there is a great need for books of this kind on beetles, not too heavily loaded with taxonomy at the expense of general biology. It is possible, however, that the Professor's confection may not be to everybody's taste as he has his own particular views as to what a well nourished coleopterist should absorb, his choice of ingredients—or rather their proportions—being somewhat unorthodox. Taxonomic matters are generally restricted to the keys, sometimes with amplification in the text, sufficient data being presented to enable identification in most cases though recourse to a full description elsewhere will often be necessary. For each species he gives a full historical review of its nomenclatural and other vicissitudes, sometimes followed by brief notes on habits and biology and here and there gobbets of morphology as deemed necessary to give 'body' to the mixture. The staple ingredient is a section (often long) devoted to the distribution of the species in Britain. The last tends to be autobiographical but then Professor Balfour-Browne has been specialising in water-beetles for a long time (about seventy years on p. xiv and fifty-six years on p. 95) and some of the earlier records are doubtless very unreliable.

Some of the Professor's views will not gain general acceptance. I find his explanations of the British distribution of some species very unsatisfying, being based on insufficient evidence, too facile an assumption of recent immigration, and too great a faith in the coverage of British collectors. His novel view that a complicated genital armature is non-functional, because we cannot guess how it works, is entirely unacceptable, and also the corollary that many species are therefore parthenogenetic.

A lengthy Introduction (p. xv-liii) is full of interesting matter relating to morphology, life history, classification, nomenclature and distribution. The author has much to say of interest and common sense on controversial topics and one agrees with his condemnation of so-called 'natural classifications' and applauds his unwillingness to accept the hare-brained system of so called subgenera erected by the continental coleopterists of a few decades ago. It seems that every time they found two or three species with a character in common it was felt necessary to provide the group with a name. This fatuity resulted occasionally in the incredible anomaly of a species having four or five of these group names of different levels, in addition to the generic name, none of which, out of context, could be distinguished from a normal generic name and all are therefore duly recorded in our standard nomenclators. Some of his notions on nomenclature I cannot subscribe to as they tend to the too ready adoption of personal views as opposed to the simple application of objective rules, with the consequent inconsistency which personal preferences introduce. From time to time B.B. cannot resist sly digs against 'grammarians', 'legalists', 'species-collectors', etc., which seem a little out of place and unnecessary.

Unfortunately the book as a whole contains a rather large number of errors, most of which are attributable to the very low level of proof-reading; others, however, are errors of fact and sometimes lead to misleading interpretations. For instance in the text Curtis' *British Entomology* is invariably quoted as 1862, whereas it was published between 1823 and 1840. It was only when the remainders were purchased by Lovell Reeve that these were bound up in orders and issued with new title-pages. 'Knowle', referred to on p. 176, was a collecting ground of Blatch, whose record is no doubt the one intended. The collection of H. W. Ellis is in the Yorkshire Museum and not at Birmingham. I can assure Professor Balfour-Browne that I was not yet born in 1894 and could not have collected *Hydraena palustris* at Askham Bog in that year. The statement that *Hydraena rufipes* was first recognised as British by

Newbery in 1907 is obviously incorrect as it was first described from Britain by Curtis in 1830. On p. 144 F. H. Waterhouse's date is 1879 and not 1913. There are a number of other slips of this kind which tend to mar the authenticity of the text. In the generic key on p. 1 it is necessary to add a figure '2' after 'Hydrophilinae' in the first rubric in order to progress through the key.

Professor Balfour-Browne appears to have some difficulties with personal names and we find Selsky for Solsky, Fallen for Fallén, C. S. Klöet for G. S. Kloet, Frabricius for Fabricius, Newbury and Newberry for Newbery, Bruellé for Brullé, Kugelin and Kugelann for Kugelann, Collet for Collett, Whittlesey for Whittlesea, etc.

The keys, as far as I have yet been able to test them, seem excellent and often present considerable improvements over those already published, particularly in such difficult genera as *Helophorus*, *Laccobius*, *Ochthebius*, etc.

The completion of these three important volumes is no mean achievement and in most respects they are a fitting memorial to the exhaustive field work and careful study given to the subject by the author for over half a century. It is needless to say that every coleopterist will want a copy of this final volume and we hope that the edition is large enough to meet the demand as it will be remembered that Volume 1 had only a small printing and is now difficult to obtain.

W.D.H.

Insect Migration, by C. B. Williams. New Naturalist Series. Pp. 234, 11 coloured plates, 22 photographs, and 49 maps and diagrams. Collins, 1958. 30/-.

The available information relating to the migrations of insects is still scanty when compared with the extent of comparable knowledge on bird migration. Nevertheless, there is now a corpus of interesting material which has been largely drawn upon by the author of the present interesting volume. Dr. Williams has maintained a life-long interest in the subject and has never neglected an opportunity, during his wide travels, of adding to the growing number of field observations; moreover he is a pioneer author whose earlier book on *The Migration of Butterflies* (1930) will be remembered.

Mass movements of native species in Britain, for the purposes of dispersal or hibernation, are well known to British entomologists, but the question of immigrant species can only be studied against a backcloth of their movements in the world as a whole; consequently much information is presented from sources outside the British Isles which is apposite to the proper understanding of the subject. Furthermore, attempts to explain behaviour and physiology must take into account all the facts of migration.

The migration of butterflies and moths occupy a premier place in the book because of the greater extent of our knowledge, but locusts, dragonflies, ladybirds and hoverflies also provide material in the Second Part, under the general heading of 'The Evidence'. Part One is short and deals with introductory matters. In Part Three, entitled 'The Problems', questions relative to the nature of migratory flights, their direction and return flights, geographical distribution and other matters are fully discussed. Part Four concludes the book and briefly deals with methods of studying migrant insects such as marking (the insect equivalent of ringing birds), followed by a bibliography on the subject.

Dr. Williams has produced a very clearly written and thoroughly readable book on a fascinating topic, well illustrated by excellent diagrams and charts, and charmingly embellished by the usual coloured plates for which the series is justly famous.

W.D.H.

Collecting, preserving and studying insects, by Harold Oldroyd. Pp. 327, 15 plates, 135 figures. Hutchinson, 1958. 25/-.

A complete guide to all the basic aspects of insect collecting by an experienced entomologist. General instructions cover all the orders of insects, starting with collecting in the field, and dealing with killing, mounting, preserving and storing. Killing agents, lenses, microscopes, photographic apparatus, camera lucida, store boxes, cabinets, and all the entomologist's paraphernalia are discussed. The use and compilation of dichotomous keys and some of the complexities of nomenclature are explained. A brief account of the special methods used in dealing with each order of insects is given. Finally, and most usefully, the reader is brought to the point of the whole business, the study, the discovery of new facts, the recording, and the necessity for publishing worth-while results, and how to set about it.

Entomologists, with increasing experience, develop their own favourite techniques and the author is right to stick to basic principles, but the treatment of different orders is rather uneven. Remarks on the general purpose net seem biased towards Diptera and Hymenoptera; for Coleoptera and Hemiptera the heavier sweeping net is essential. Surely the coleopterist who tried to collect the larger beetles with forceps would be unlikely to get a large 'bag'. The preparation of a gum from celluloid chips is described, but gum tragacanth, so widely used, is not mentioned. But these, and similar small criticisms that could be made, must not be allowed to detract from the very considerable merits of the book, which is well produced, clearly and plentifully illustrated, and full of the useful sort of tips that the beginner needs.

J.H.F.

Anatomy of the Chordates, by Charles K. Weichert. Second edition. Pp. viii + 899 with 469 text figures. McGraw-Hill Publications in the Zoological Sciences. 74/-.

The field covered by the title of this book is now so vast that a single volume even of the present substantial length, can hope only to introduce a student to the essential framework of the subject. The author in turn can be expected to maintain an acceptable balance between the different headings under which he chooses to treat his material, and between the theoretical and factual aspects of the material itself. Part I is a general review of the chordates and is very attractively presented, but a tendency is manifested here as elsewhere to intermingle some information which is very up-to-date with some, both in the text and in the figures, which is quite otherwise. The classification of the bony fish, for example, is no longer satisfactory, and to find *Pterichthys* still among the ostracoderms is an echo from a very distant past. The treatment of the lower chordates is confined to this Part and is altogether too cursory to have much value. Part II forms the main bulk of the book and is divided into chapters on the various organ systems of the vertebrates. The anatomical treatment is very full and the author has increased the interest of the text by numerous examples of functional significance; short physiological discussions are also introduced where apposite. On the other hand there is a certain lack of underlying pattern or of theoretical guidance for the student through such a mass of factual detail, which perhaps constitutes the main defect of the book. This is particularly evident in the section on the skull, where the various types are left rather unrelated to each other and little assistance given in tracing out the histories of the different bones. Here particularly the introduction of some palaeontological findings is virtually essential, and would help also to avoid such minor blemishes as the confusion between the reptilian prevomer and the mammalian vomer and the derivation of the tympanic from the quadrate. Part III gives full descriptions of four laboratory animals, useful where separate dissection manuals are not available. The printing and general production is maintained at the admirable level of these publications, as is the reproduction of the very numerous illustrations, and there is an impressive lack of minor errors.

T.K.

The Autobiography of Charles Darwin, edited by Nora Barlow. Pp. 253 with 4 plates. Collins. 16/-.

Darwin's autobiography was first published five years after his death. In the present edition by his grand-daughter all the passages which, for family reasons or considerations of tact, were omitted from the earlier versions, are restored as originally written. The restored passages are all minor additions which add no significant facts to what is already well known. But one is impressed anew in reading the autobiography, by Darwin's goodness as a man: his intellectual honesty and integrity were absolute, and the sheltered and serene home life which he enjoyed, devoted to and by his family, provided an essential need for the flowering of his genius.

Two appendices and several notes enlarge on matters arising in the text and include some unpublished letters. Of these the major item is concerned with a detailed and fully documented examination of the controversy between Darwin and Samuel Butler. The others deal with his health, his wife's religious views, his own premarital assessment of the pros and cons of marriage *versus* bachelorhood, his father's objections to his joining the *Beagle* and how they were overcome, and a comparison of Charles and Erasmus Darwin.

W.A.S.

Linnaeus' Species Plantarum. A Facsimile of the First Edition, 1753, Vol. 1, with an introduction by **W. T. Stearn.** Pp. xiv + 176 + 570. Ray Society: sold by Bernard Quaritch Limited, London, 1957. 50/-.

The *Species Plantarum* of Linnaeus occupies much the same unique position in the field of systematic botany as does Darwin's *Origin of Species* in evolution. But even more than the *Origin* it remains an indispensable reference book for research purposes. Owing to the rarity and costliness of the first edition, which by international consent is accepted as the starting point of modern botanical nomenclature, facsimiles have twice previously been published, but these too are now scarce works. The publication of this third facsimile edition once more makes this fundamental work available to systematic botanists.

Unlike its predecessors the value of the present edition is vastly enhanced by an historical and bibliographical introduction which adds so greatly to its working value that for practical purposes it is much to be preferred to an original issue. For the *Species Plantarum* cannot be used properly without a full understanding of its author's methods, the details of its format and the background of its publication. All this and much more is provided in Mr. Stearn's lengthy and scholarly introduction. The already extensive literature on Linnaeus and his works is continually growing, and from the mass of available data Mr. Stearn has assembled all the relevant information bearing on the circumstances and manner of preparation and the material on which Linnaeus based his most celebrated work. As the *Species Plantarum* cannot be properly understood as an isolated work, consideration is given to several of Linnaeus's cognate botanical works such as the *Genera Plantarum*, the *Hortus Cliffortianus* and the *Amoenitates academicae*. The sources, format, method and language of the *Species Plantarum*, its editions and variants together with facsimiles of cancelled pages in the first issue, the modern geographical equivalents of the often cryptic distributions assigned to species, the meaning of various signs and symbols employed by Linnaeus and the bibliographical details of the pre-Linnaean literature to which references are given in the work itself, all receive detailed treatment and explanation.

The existence of a specimen in Linnaeus's collections at Burlington House does not necessarily mean that this is a type and the problem of typification frequently arises where no Linnaean specimen is known to exist. It is therefore imperative for research workers in systematic botany to know of the location of other collections containing Linnaean specimens, and of those collections and illustrated works consulted by him and therefore of value for purposes of typification. All this essential knowledge is assembled in an introduction which forms an invaluable compendium of information designed especially as an aid to working systematists.

The Ray Society could not have commemorated the two hundred and fiftieth anniversary of the birth of Linnaeus more appropriately or more usefully: Mr. Stearn's admirable introduction deserves the highest praise and the printing and production are of the superior quality associated with Ray Society publications. It is to be hoped that the issue of the second volume will not be long delayed.

W.A.S.

Handbook of the Rubi of Great Britain and Ireland, by **W. C. R. Watson.** Pp. xii + 274 with 50 drawings. Cambridge University Press. 63/-.

The brambles are second only to the hawkweeds in their bewildering diversity of form and hence in the difficulties which they present to the systematic botanist. A few years ago a new monograph of the British hawkweeds was published; now we have a new account of the brambles. By a sad coincidence both authors died shortly before their books were published.

The late Mr. Watson studied brambles assiduously for over forty years and one of the great merits of his work was his familiarity with Continental species, in the field as well as in the library and herbarium. His views on the application to British plants of names originally bestowed on Continental gatherings frequently differ from those which had long been accepted by earlier British workers and his greater freedom from insularity of approach to his subject make it inherently more probable that his views are usually right.

The great majority of our wild blackberries are tetraploids and are probably mostly sexual. A few triploids, pentaploids and hexaploids also occur but *R. ulmifolius* is the only British diploid so far known. (The cloudberry is an octoploid.) The fixity of their characters is undeniable but variations of climate and habitat

induce fluctuating variations which add to the difficulty of species recognition. Many of the British species are confined to southern and south-western England, though this may in part be a reflection of the intensity of investigation in these parts. The number of *Rubus* species described in this book is 391. Of these 104 are endemic. Thirteen species are classed as raspberry-blackberry hybrids and twenty-one as dewberry-blackberry hybrids, the remaining true blackberries falling into five major sections. Here the classification adopted is essentially that of Focke's in Ascherson and Graebner's *Synopsis*, the main sections being delimited on armature characters. The division of the sections into subsections, series and subseries is partly based on Focke, partly on Genevier and Sudre and is partly original. An analytical key to the classification and conspectus of species paves the way for identification as far as a small group of species. The descriptions themselves are concise with significant characters italicised, and vice-county distributions and Continental ranges are given for each species. There are in addition good drawings of fifty species by Ruth M. Ball and A. W. Darnell.

This is a notable addition to our knowledge of the British flora which should stimulate a wider interest in these difficult plants. An enthusiasm for blackberry systematics is likely to remain one of the more esoteric botanical pursuits and no doubt in the future as in the past the majority of field botanists will still be content to name all brambles *Rubus fruticosus* agg. But the really ardent students of the British flora have no excuse now for by-passing this group as nearly all of them have previously done.

W.A.S.

England's Forests, by H. L. Edlin. Pp. 223 with 41 plates and 7 maps. Faber and Faber, 1958. 30/-.

This book can be wholeheartedly recommended to all those who look for a straightforward account of the woodlands of this country and their history. The chapters are arranged topographically in the form of a circular tour from the north, to the south-east, across the south to the west, and up to Wales and the west Midlands. The writing is sufficiently sprightly to sustain the readers' interest and yet conveys the proper impression of accuracy and authenticity. The book is not only a branch line in English history, but also a mine of information on many aspects of forestry, and all embellished by some excellent pictures.

Apart from this the book is likely to fulfil the useful purpose of commending the national forestry policy. This often inevitably leads to criticism (from the aesthetic to the commercial) because the reasons for it are not always made sufficiently plain, and Mr. Edlin does succeed in showing that there is a reasonable and valuable plan behind it all.

R.G.

Earth's Company, by Leslie Reid. Pp. 222 with 24 illustrations. John Murray, London, 1958. 25/-.

Within the confines of a relatively slender volume, the author has attempted a work, for the general reader, on ecology in its widest possible sense. Although he deals adequately with habitats and the morphological and physiological characteristics of plants and animals, he is equally concerned to stress the adaptive behaviour which has been so significant a part of recent zoological investigation. Those parts of the book which are frankly derivative owe more to Allee, Lorenz and Thorpe than to the school of Elton but the synthesis is skilfully combined with a fund of personal observation which enlivens a great deal of necessary recapitulation.

This work will be read with pleasure and profit by all to whom the study of natural history is not merely a collecting of specimens and data but a questing after the widest possible appreciation of life as we can know it.

My one quarrel with the author lies with his last sentence in a foreword which is designedly philosophical. He says 'Our journey along the road of truth is fumbling and hesitant, but we shall come to the end at last.' That we are capable of a 'complete apprehension of the wonder and glory of the natural world' might be true of a finite creation but, as a species, we forget almost as fast as we learn. The intuitive comprehensions of primitive peoples are probably as near to the truth as we shall ever get. The detailed exploration of byroads and local splendours is great fun and employs our human curiosity in a very proper way but we shall be happier and better equipped for our quest if we acknowledge our humble limitations.

A.H.

Interpreting Our Heritage, by **Freeman Tilden**. Pp. 110 with 42 illustrations. North Carolina University Press. London: Oxford University Press. 28/-.

The subtitle of this pioneer work is 'Principles and Practices for Visitor Services in Parks, Museums and Historic Places' and its author a well-known American novelist and playwright who has for many years been interested in conservation and in 1940 became a collaborator in the National Park Service of America.

The purport of his message is towards a painless didacticism, of the need for meeting the visitor more than half-way, by galvanic labelling, by the practical demonstration of bygone technologies and the encouragement of audience participation. Gone are the days when the museum and its outdoor ancillaries were the ivory towers of research and conservation; we are now, very properly, called upon to give account of our work and our charges in such a way as to make them comprehensible to the great public whose money maintains us. Nor will the guide lecturer suffice, for the only interpretation worth a rap is that from the specialist enthusiast who can convey his knowledge as an adventure, not as a duty.

With every fresh advance into automation, there stems the need for man to be able to relate himself to the world in which he lives or he will become increasingly a neurotic dependent upon the charity of the technologist. It is this need for understanding his status in the natural world, for realising 'something of the beauty and wonder, the inspiration and spiritual meaning that lie behind what . . . his senses perceive' that provides the fundamental purpose of all our researches and it is the author's main contention that interpretation is now the primary duty of all the types of institution outlined in the sub-title. I could wish that the work were freely available to all concerned with such affairs in this country but it is heartening to know that the author's citation of the Master Interpreter is Thomas Henry Huxley. A.H.

Portrait of a Wilderness, by **Guy Mountfort**. Pp. 240 with 130 photographs, 15 coloured. Hutchinson. 30/-.

Although the Coto Donana has been a hunting reserve for 350 years, its status as an ornithological paradise was revealed only when the hunting rights were leased by a trio of Englishmen who numbered among them the redoubtable Abel Chapman. The two works, *Wild Spain* and *Unexplored Spain*, in which he related his shooting and bird-watching experiences over half a century ago, have remained the classic accounts of the neighbourhood and themselves stimulated the author to bring to bear the resources of modern techniques in three expeditions to the area in 1952, 1956 and 1957. Most of us have already seen the films made by these expeditions and this book recounts the fun and the hard work which went to the making of not only the films and the incomparable series of still photographs but also of the more scientific reports on the area which are to be published in the appropriate journals. Guy Mountfort writes simply, and therefore well, and manages to convey the wonder and the delight of exploration as well as the pleasure derived from the various consortia of enthusiasts who made up the expeditions. Special attention was devoted to the birds of prey and many species of birds were photographed for the first time.

Every naturalist will wish to read this book and to offer thanks not only to the author and his companions but also to their Spanish hosts who seem even to have excelled the renowned hospitality of their countrymen, and, by no means least, that great north countryman whose works, now scarce and expensive, formed the groundwork of which this book is the graceful, well-produced and highly decorative complement.

A.H.

Spiders, Scorpions, Centipedes and Mites, by **J. L. Cloudsley-Thompson**. Pp. xiv+228 with 35 plates and 40 text figures. Pergamon Press, Fitzroy Square, London, W.1. 50/-.

The title of this book is somewhat misleading and a better indication of its scope is provided by the sub-title: 'The Ecology and Natural History of Woodlice, "Myriapods" and Arachnids.' In taking as his subject matter the terrestrial Arthropoda, excluding the insects, Dr. Cloudsley-Thompson has filled a gap in the literature. In the past, so far as the arthropods are concerned, attention has been focussed mainly on the biology of the insects and the aquatic Crustacea. Just how big this gap is can be seen by reference to any general textbook on the Invertebrata. The book will be useful not only to the natural historian but also to the university

student of zoology, who wishes to acquire some knowledge of the less well-known groups of land arthropods.

Each group is treated in the same way with sections on classification and distribution, general behaviour, food and feeding habits, enemies, and reproduction and life cycle, with a bibliography covering the identification and biology of the group. In these sections a surprising amount of useful and interesting information has been compressed in a most readable form. Besides the usual indices there is a glossary and index of scientific terms.

One of the strongest impressions which Dr. Cloudsley-Thompson's book leaves is that, in spite of the work that has been done in recent years on the terrestrial Arthropoda, we still know all too little about their ecology and natural history. Indeed one of the great values of the book is that it makes apparent the innumerable problems which still await study and solution.

The book would have been improved by a short introductory chapter on methods of collection, preservation, etc. The price for a book of this sort seems to be unduly high and it could probably have been considerably reduced if the forty-odd plates had been omitted. These, though attractive, cannot be said to add substantially to its value.

E.L.S.

Handbooks for the Identification of British Insects. Published by the Royal Entomological Society of London, 41 Queen's Gate, S.W.7.

Vol. VIII, part 3 (dii), Hymenoptera, Proctotrupeoidea: Diapriidae subfamily Belytinae, by G. E. J. Nixon. December 1957. 107 pp, 314 figs. Price £1.

This part of the 'Handbooks' is of special interest for two reasons. It is the first part to appear dealing with members of the parasitic Hymenoptera, a suborder including a quarter of our British insects, and on which, with very minor exceptions, no revisional works enabling the insects to be identified, have appeared in this country for very many years. Secondly, it breaks new ground in the series by including, as well as known British species, others from North-Western Europe. This is a great advantage when we realise how little work has been done on the British species and how easily additions may be encountered. It also places our British fauna in its true context as a part of a larger and richer European fauna. The keys include over 200 species, a number of which are new to science, and much new synonymy. Belytines present much uniformity and are consequently difficult to identify correctly but the author claims that if the keys are followed carefully and the numerous text-figures compared it should be possible to determine the identity of most British species. This is a most welcome addition to the series of 'Handbooks' and should do much to stimulate interest in a very neglected group of insects.

W.D.H.

Collins' Pocket Guide to the Seashore, by John Barrett and C. M. Yonge. Pp. 272 with 40 colour plates, 40 black and white plates and numerous text-figures. Collins. 25/-.

This book will probably replace all other guides to the identification of shore plants and animals, both among the amateur naturalists for whom it is intended and also among undergraduates. It is mainly concerned with the identification of shore animals, but there is a section on algae together with mention of lichens and flowering plants as well as an introductory account of tides, habitats and types of shore life.

With the emphasis upon the amateur approach the authors take care to indicate pitfalls in identification. Thus in the introduction the Sponges, Hydroids and Polyzoa are first mentioned in a section on 'plant-like animals', while the chapter on Sponges concludes with a list of other things which might be confused with them, e.g. egg masses of *Buccinum*. While the latest nomenclature is used the attempt to avoid technical terms is perhaps carried too far in the substitution of 'nipper' for the crustacean claw or cheliped.

The book is well illustrated and the black and white plates, especially of the Crustacea, are very clear. The coloured plates have met with varying success, some, e.g. Sponges, being too intense, while others, e.g. Nudibranchs, are too delicate. The colours of the algae however are much more accurate than one can obtain at the moment with colour photography, and the only criticism of these plates is the lack of a scale which could cause some confusion to a beginner.

In spite of these criticisms the authors have produced a very useful book which should not only serve as a guide to identification but which should stimulate students to enquire further into marine biology.

J.R.L.

A Key to the Adults and Nymphs of British Stoneflies (Plecoptera), by **H. B. N. Hynes**. Pp. 87 with 221 figs. and 30 distribution maps. Freshwater Biological Association, Scientific Publications, No. 17. Price to non-members, 5/6.

The series of synopses issued by the Freshwater Biological Association are well known to naturalists for their excellence and utility. The present handbook replaces Scientific Publication, No. 2, published in 1940, and has been completely revised and considerably enlarged to include the nymphs of British stoneflies. A new family (Chloroperlidae) is recognised and some important changes in nomenclature are made. The keys to both adults and nymphs are excellent and are admirably illustrated by the large number of good figures prepared by the author. A series of distribution maps are an innovation of but limited value owing to their small scale and the space occupied (pp. 79-83) might have been better used by providing a list of the vice-comital records.

This revised synopsis will be greatly appreciated by entomologists and freshwater biologists and is extremely good value at the astonishingly low price of 5/6.

W.D.H.

The Lepidoptera of Formby, by **M. J. Leach** and **H. N. Michaelis**. Pp. 38 with 2 portraits and 1 sketch map. The Raven Entomological and Natural History Society, 1958. 2/6.

This publication is a fitting memorial to the genial and hospitable founder of the Raven Society, the late Colonel Gerald de Courcy Fraser, who studied the Lepidoptera (and other insects) of the Lancashire coast around his home at Freshfield for many years and who did so much to stimulate these interests in others. Mr. Allan Brindle, the Honorary Secretary of the Society, contributes a Foreword and Mrs. C. de C. Whiteley a short notice of her father. The area of coast between Southport and Liverpool is one of the most remarkable and interesting from an entomological point of view in the whole of the north of England. The richness and abundance of the insect fauna is reflected in this preliminary list of the Lepidoptera which occupies the major part (pp. 13-38) of this publication and which includes over 700 species. The name of Mr. H. N. Michaelis is a sufficient guarantee of the excellence of the list and the limited printing, at the low price of 2/6, promises to sell out very quickly. Lepidopterists wishing to secure copies should write to Mr. A. Brindle, 86 Princess Street, Nelson.

W.D.H.

Your Book of Bird Watching, by **Richard Fitter**. Pp. 40 with 12 plates. Faber & Faber Ltd. 7/6.

This is one of a series of primers devoted to youthful hobbies. The text is terse and inclined to slang but if the manner is avuncular, the advice is sound, particularly in its emphasis on the need for getting to know the common birds well before searching out the rarities.

Limits of space, imposed by the need to hold down the price, do not allow the author to say more than could be imparted by any practised naturalist in half an hour's chat, but, to children out of touch with such a preceptor, its injunctions are so sound that, given the initial urge, they will soon be well on the way to being meticulous observers.

The book would be even more useful if greater thought had been given to the choice of the plates which are mostly undistinguished photographs of nests and eggs.

A.H.

Principles of Biological Microtechnique. A study of fixation and dyeing. By **John R. Baker**. Pp. 357, 9 plates, 14 text illustrations. Methuen. 45/-.

Dr. Baker has written a book which will be of interest to all who make microscopical examination of cells and tissues. The principles involved in the various processes of fixation and staining are clearly explained; the dyes used in staining are described and their chemical formulae given. There is a long discussion of the mode of action and specific use of a large range of fixatives and fixative mixtures, and chapters on blood dyes and on vital staining. The text is well illustrated with

tables, diagrams and plates, and there is a list of 559 references. Simple experiments on fixation and dyeing are described in two appendices.

The research worker will find this book of great value as a reference volume, and the general scientific worker will enjoy the able presentation of a wealth of information.

E.R.

The Observer's Book of Cacti and other Succulents, by S. H. Scott. Pp. 159, with 64 plates (16 in colour). Warne, 1958. 5/-.

This book gives information, quite suitable even for the complete beginner, about the cultivation, propagation, nature and classification of cacti and other succulents, and describes briefly over 300 species, which include most of the common ones found in small collections as well as some of the more exotic and spectacular species. There is a generous selection of useful photographs, but an indication of scale would sometimes have been advantageous. The author is the Hon. Secretary of the National Cactus and Succulent Society and writes as an expert with much practical experience and a great love of these plants. The subject matter has been treated in a scientific manner, the succulent species, for instance, being described systematically according to their plant family. The book is clearly written, contains a remarkable amount of information, is excellent value for money and can be warmly recommended.

B.A.K.

In Garden, Field and Pond, by Jill Norman. Pp. 154. London, 1958. Hutchinson. 9/6.

Brief accounts, for children, of the lives of a selection of invertebrates, spiders, earthworm, mantis, grasshopper, bees, wasps, beetles, etc. Well written and agreeably illustrated by the author's drawings it will appeal to children with an interest in natural history. But can a reviewer recommend for children a book that contains so many errors of fact and inapt descriptions? The male stag beetle is not 'shining black', the crane-fly's leg is not eight times as long as the body, the caudal gills of damselflies cannot be described as feathery. The author comes a fearful cropper when she attributes the underside characters of the water beetle *Hydrous* to the totally different *Dytiscus*; my eleven-year-old son spotted that one. There are others, and this is a great pity as it destroys confidence in an otherwise well-written book.

J.H.F.

Nature Study for Schools, by K. S. N. Kirby. Pp. 120. Methuen. 12/6.

This little book sets out to try to establish 'the scientific and educational principles of good Nature Study'. The writer is a lecturer in a training college and the subject is discussed throughout in the light of the needs and interests of the young pupil and his development. The book contains much good advice and many hints on both the theory and practice of teaching elementary natural history, and the writer continually stresses that the lack of proper apparatus should never deter a teacher from a truly practical and experimental approach to the subject. The book should be stimulating to those who teach in Junior and Secondary Modern schools.

There is a classified book list and a list of leaflets and addresses which will prove a useful feature for most teachers who are interested in Nature Study.

Along the Seashore, by Cecily M. Rutley. Pp. 124 with 4 colour plates and numerous text illustrations. Warne, 1958. 6/-.

This is the sixth and latest book in the 'Green Meadow' series which Cecily Rutley is writing as natural history guides to different habitats for the younger reader. The book deals with seaside plants (not forgetting grasses, sedges, rushes and ferns), seaweeds, crabs, anemones, shells, seabirds and so on. It is refreshing to find a good balance in subject matter, as so often in popular nature study books one finds plants given only passing mention or ignored altogether. The book should prove attractive and useful to younger people, stimulate their interest and aid identification, although it will not be every day that the young naturalist finds Maidenhair fern or sees a Narwhal, and may be not every local inhabitant will serve to verify the statement that long experience has taught folk who spend all their lives by the sea, which varieties of sea shore plants are good to eat.

B.A.K.

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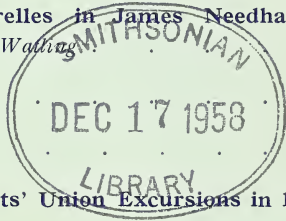
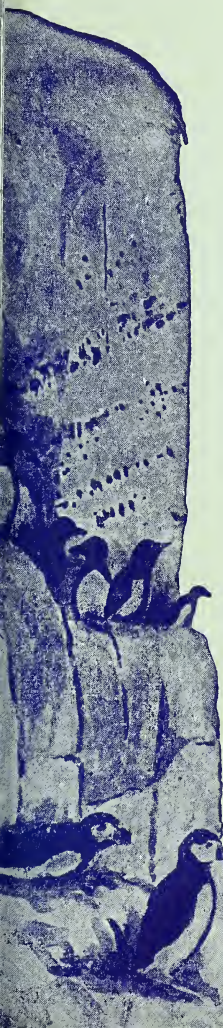
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14th-16th November, 1958

GRANTLEY HALL ADULT EDUCATION COLLEGE, has arranged (in conjunction with the Y.N.U. Ornithological Section and the British Trust for Ornithology), a week-end course on 'BIRD MIGRATION,' from Friday evening to Sunday evening, 14th-16th November, 1958.

Lecturers will be Kenneth Williamson (the B.T.O. Migration Research Officer); Robert Spencer (secretary of the Ringing scheme); and Dr. G. V. T. Matthews of the Severn Wildfowl Trust (author of 'Bird Navigation').

Full details, together with information regarding fees, transport from Ripon to Grantley Hall, etc., can be obtained from the Warden, Adult College, Grantley Hall, Nr. RIPON, Yorks., to whom application should also be made.

Copies of Mr. A. A. Pearson's Papers, Mycena, The Genus Lactarius, and The Genus Inocybe, and second editions of British Boleti and The Genus Russula, price 2/6 each, and Mr. P. D. Orton's Cortinarius Part 1 and 2 price 7/6 each, may be obtained, from the Editor of *The Naturalist*.

BINDING THE NATURALIST in standard dark blue cloth case with gilt lettering on back and side, 7/6 per volume, or post free 8/4 (remittance should accompany order). A. Brown & Sons, Ltd., 'C' Dept., Perth Street West, Hull.

THE STATUS OF WILD BIRDS IN LEEDS, including historical records from 1800.

A. H. B. LEE.

Though Henry Denny, in 1840, produced a list of birds occurring in the neighbourhood of Leeds, no summary of city records appears to have been compiled. The present paper includes all records which have been traced of birds which have occurred within the city boundaries ruling in 1957. In the past, of course, these boundaries were more restricted and, at the time of the occurrence, the birds may well have been outside the old limits but inside today's boundaries. One or two old records have been omitted as considerable doubt was expressed by the authority quoting them. The increased interest in ornithology since the last war has produced a large number of records in the past ten years, and notes have thus been more numerous than in the earlier period.

Eccup Reservoir, which has produced most of the twentieth century wildfowl records, has been intensively watched in recent years, but during the 1939-45 war period was "out of bounds". Though the reservoir was constructed in the previous century there are few records from there until the 1930's.

The part which the city parks have had to play in attracting wild birds will become obvious to the reader. The city is very fortunate in possessing such a variety of parkland within easy reach of the public, though the abundance of wild life is probably little known to many. The need for clearance of old timber from time to time is unfortunate in that such trees possess considerable attraction to many nesting species. It is to be hoped that some middle course may be followed so that there shall be no diminution in the number of hole-nesting birds. These, in common with some other species, perform a useful function in keeping down caterpillar and insect pests.

The number of migrant birds actually passing over the city centre has probably been under-estimated in the past, but there are numerous records of small flocks of many species moving up or down the Aire valley which undoubtedly fly over the built-up areas. In winter some of these areas are also visited by birds, particularly in hard weather.

The establishment of sewage farms in the Aire valley in the past century has added to the attractions for many resident and migrant birds. Until recent times the Black-headed Gull was not regarded as a breeding bird of the area, but both major sewage farms (Knostrop and Rodley) have provided nesting sites for this species. Many of the records of wading birds come from these areas. Industrial development seems likely however to reduce the effectiveness of Knostrop though it may be some years before the sludge lagoon disappears.

Of the 192 species included in the list 70 can be regarded as regular breeding birds and 18 have nested only very irregularly. Five species, which were originally introduced to this country many years ago, are included though they are not indigenous. All have nested in the area in a wild state. Three—Canada Goose, Mute Swan, and Pheasant—have been present for centuries, but the Red-legged Partridge and Little Owl have increased markedly in the West Riding since 1900 and have established themselves in the city area.

Birds which were once not uncommon, but which have not been recorded in the present century, are Kite, Wryneck and Twite. The Corncrake has declined severely in the past forty years, the Long-eared Owl and Red-backed Shrike, while never abundant, are now only rarely recorded, and the Wood Warbler appears to be falling away as a breeding species.

Several species have become more numerous in recent times. The Goosander is now a regular winter visitor to Eccup Reservoir in fair numbers. Among the waders the Green Sandpiper has apparently become more regular as a passage migrant. The Black-headed Gull has, as mentioned earlier, become more common as a nesting bird. The decline in gamekeeping during the 1939-45 war period is probably the cause of an increase in birds of the Crow family. Some birds have been reported more commonly since 1945 but this probably reflects the increasing interest in ornithology.

Much could be said about the influence of birds-nesting in the city area but the new Protection of Birds Act, 1954, should assist in reducing this threat if its supporters will endeavour to implement its clauses. It is hoped that egg-collecting will decline and school-teachers can greatly help by encouraging children to believe that the destruction of bird's nests and eggs is to be deplored.

Ornithologists justifiably concentrate their activities on more rural areas but it is hoped that this paper will encourage a little more interest in the birds occurring within the city limits.

The status of the more common birds has been based partly on actual records and partly on the experience of the compiler and four referees who have been consulted and who are thanked for their assistance in reading the draft and for their suggested improvements. The referees concerned are: Kenneth Dawson, Arthur Gilpin, Donald E. Harrison, and Roger V. Jackson.

As the majority of the records have already appeared in reports, both county and local, the initials of the persons who originally recorded the occurrences have not been included. Though few of these people will realise, until now, that their records have been used for this paper, the compiler is nevertheless grateful for their assistance.

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1. BLACK-THROATED DIVER; *Gavia arctica*.

A very rare vagrant.

A bird was present at Eccup Reservoir from November 3rd to December 1st, 1935.

4. RED-THROATED DIVER; *Gavia stellata*.

An occasional wind-blown visitor.

One was noted on Eccup Reservoir between May 6th and 31st 1947. Another died there on March 9th 1950 after being present from January 21st. Following an easterly blizzard a bird was seen on the same water on February 14th and 15th 1953. Another bird was recorded there on January 31st, 1954.

There are only two records elsewhere. One was found in Harehills Lane in January 1829, while Denny mentions its occurrence on the River Aire in 1838.

5. GREAT CRESTED GREBE; *Podiceps cristatus*.

Recorded every year at Eccup Reservoir, usually between March and May, when passage birds are seen in numbers up to c. 15. Smaller groups occur during the summer and autumn months. Single birds are reported from time to time in the winter. Odd birds have visited Roundhay Park lakes in some winters, and a pair bred in 1958.

6. RED-NECKED GREBE; *Podiceps griseigena*.

A rare vagrant.

Single birds occurred at Eccup Reservoir on January 31st and November 28th 1954, and on February 23rd, 1956.

7. SLAVONIAN GREBE; *Podiceps auritus*.

While an uncommon visitor to the area, single birds have occurred at Eccup Reservoir more frequently in recent winters. The only other water to attract this species was Roundhay Park (Waterloo lake) from October 24th to 28th, 1951.

8. BLACK-NECKED GREBE; *Podiceps caspicus*.

Surprisingly uncommon in view of regular records of small numbers in the lower Aire valley. Single birds were seen at Eccup Reservoir in November 1934, January and August 1947, and in February and October 1950.

9. LITTLE GREBE; *Podiceps ruficollis*.

Occasionally recorded at Eccup Reservoir at times of spring passage and autumn dispersal from breeding sites. Odd winter records have come from Pauls Pond, where breeding has also occurred. Roundhay Park lakes and Knostrop sewage farm have also attracted breeding pairs in the past.

12. LEACH'S PETREL; *Oceanodroma leucorhoa*.

A rare storm-driven vagrant.

One was purchased in Leeds market about 1863. A bird was picked up at Hyde Park in November 1905. After south-westerly gales in October 1952, several were found dead within the city boundary, and one was seen in flight at Eccup Reservoir on the 18th.

16. MANX SHEARWATER; *Procellaria puffinus*.

A very rare gale-drifted vagrant.

One, found alive in a Headingley garden after a period of gales on September 1st, 1953, was later released at Fewston Reservoir.

19. GREAT SHEARWATER; *Procellaria gravis*.

Reported to have been taken in Leeds in October 1854, but Nelson warned of possible confusion with Sooty Shearwater (*P. grisea*).

27. GANNET; *Sula bassana*.

One was found at Kirkstall in April 1834, presumably having been storm-driven inland.

28. CORMORANT; *Phalacrocorax carbo*.

A very occasional visitor in recent years.

A single bird at Eccup Reservoir on April 4th, 1953; three were present on April 10th and 11th, 1955; a single bird was again noted on August 24th, 1955.

30. HERON; *Ardea cinerea*.

Regularly seen over the outskirts outside the breeding season, particularly on the shores of Eccup Reservoir, and occasionally by Adel dam, Waterloo lake, Temple-newsam and at Knostrop. Odd birds have been seen over the urban area, even the city centre. W. Raine (1881) stated that the species had formerly bred in Roundhay Park.

31. PURPLE HERON; *Ardea purpurea*.

Eagle Clarke (1881) includes a male bird recorded at Temple Thorpe in May 1850. The record first appears in Morris' *British Birds* (1855).

37. LITTLE BITTERN; *Ixobrychus minutus*.

An undated record of a bird taken alive in Hunslet is referred to by Nelson.

45. MALLARD; *Anas platyrhynchos*.

Birds breed quite regularly in small numbers near water in several parks. Breeding has also been reported from other places including Adel dam, Headingley filter beds, Kirkstall, Bramley Fall woods, Shadwell, Roundhay Park, Gledhow valley and Eccup Reservoir. In winter numbers build up at Eccup, occasionally attaining 2,000. Small flocks occur on lesser waters.

46. TEAL; *Anas crecca*.

A breeding duck in small numbers, not always in close proximity to water but more restricted in distribution than the preceding species. Nelson mentioned breeding on Adel Moor in the 19th century. Numbers at Eccup Reservoir increase in the autumn but rarely exceed 100 even in mid-winter. Small parties are occasionally found on small waters such as Pauls Pond but larger numbers, up to about 1,000, have been attracted to Knostrop sewage farm in the hard winter months.

47. GARGANEY; *Anas querquedula*.

A very rare summer visitor.

One record only—a drake at Knostrop in April 1955.

49. GADWALL; *Anas strepera*.

An occasional winter visitor at Eccup Reservoir in recent years, though four were present on November, 4th 1939. One occurred on February 19th and 20th 1955, and 2 on September 11th. A drake was present on March 3rd, 1956.

50. WIGEON; *Anas penelope*.

Principally a winter visitor to Eccup Reservoir, usually arriving in late September or early October. Numbers seldom rise over 150. Single birds have tarried into May.

Small numbers have occurred at Knostrop sewage farm, and in the nineteenth century they were known to visit the Roundhay Park lakes in hard weather.

52. PINTAIL; *Anas acuta*.

Almost a regular winter visitor to Eccup Reservoir in small numbers; eight drakes and nine ducks on March 21st, 1954, were an unusually large party. Individual birds have appeared to spend several months on the reservoir.

Knostrop sewage farm has occasionally attracted single birds or small groups; on December 25th, 1955, a drake and three ducks flew over to the west—towards the city.

53. SHOVELER; *Spatula clypeata*.

A sporadic breeder in one or two places; Templenewsam in the nineteenth century (according to Nelson) and Knostrop recently. On Eccup Reservoir in some years considerable numbers occur in October, which suggests passage. This is, at other times, an uncommon duck on this water.

55. SCAUP; *Aythya marila*.

A scarce visitor to Eccup Reservoir in the winter months in very small numbers. A party of six was recorded on November 10th, 1947.

56. TUFTED DUCK; *Aythya fuligula*.

An occasional visitor to Eccup Reservoir, numbers rarely exceeding 40; more usually less than 10. No apparent pattern to occurrences though majority are out of the breeding season. The species has also been reported occasionally from Pauls Pond, Headingley filter beds, Waterloo lake and Knostrop.

57. POCHARD; *Aythya ferina*.

Reported very occasionally in winter from Eccup Reservoir, rarely exceeding 20 in a flock. Odd birds appear irregularly in larger flocks of Tufted. Rarely reported elsewhere in the area, though Waterloo lake has been visited.

60. GOLDENEYE; *Bucephala clangula*.

A regular winter visitor in varying numbers, mainly at Eccup Reservoir where they normally appear at the end of September. August 27th, 1950, was an unusually early date. Numbers are seldom over c. 12, and single birds have also occurred on Waterloo lake, and Pauls Pond. Three visited Knostrop in February 1956. Most birds have departed by the end of April, though isolated birds occasionally linger into mid-May.

61. LONG-TAILED DUCK; *Clangula hyemalis*.

A very rare winter visitor only once recorded. An immature or moulting drake was at Eccup Reservoir on October 22nd, 1950.

64. COMMON SCOTER; *Melanitta nigra*.

Records of the occurrence of this duck indicates some overland passage on a small scale in mid-summer. During the periods February to April, and July to December, odd birds or small flocks have not uncommonly been reported on Eccup Reservoir. Larger numbers were 20 on July 13th, 1947, and 50 on July 11th, 1948. Fourteen were seen on October 28th, 1939.

69. RED-BREADED MERGANSER; *Mergus serrator*.

Individuals have been reliably reported from Eccup Reservoir on very few occasions. There are four February records, one in April, one in November and two in December. A party of seven was seen in December, 1955.

70. GOOSANDER; *Mergus merganser*.

A regular winter visitor to Eccup Reservoir, which has become more numerous in recent years. Numbers reach a maximum in early spring, occasionally exceeding 80. The proportion of females or immature birds to males increases in April as the total number of birds present decreases. A few birds delay their departure until May in some years.

71. SMEW; *Mergus albellus*.

This bird visits Eccup Reservoir in very small numbers in some winters. Most records indicate that February is the favoured month, usually in hard weather. The largest party was two males and five "redheads" on February 14th 1939.

Denny recorded its occurrence at Gledhow in 1838 but gave no details. An immature male visited Adel dam on April 7th, 1934.

73. SHELDUCK; *Tadorna tadorna*.

This species may be encountered in any month and is reported at Eccup Reservoir in most years, usually in very small numbers, either in early spring or late autumn. Four were present on December 26th, 1954, following westerly gales. Single birds have been noted in the autumn at Rodley sewage farm, and at Knostrop two flew over to the east, possibly having crossed the city, in June, 1955.

76. WHITE-FRONTED GOOSE; *Anser albifrons*.

Though probably occurring in the odd flocks of unidentified "grey" geese which fly over the city area in the winter months, there is only one definite record. Seventeen flew to the south-west over Leeds on March 22nd 1947.

78. PINK-FOOTED GOOSE; *Anser brachyrhynchus*.

Most records of "grey" geese will apply to this species. There is little pattern discernable in the records though more have been noted flying to the west. Reports are usually between October and February and rarely involve more than 250 birds. September 9th, 1945, was an early date for a westbound flock over the city.

82. CANADA GOOSE; *Branta canadensis*.

This introduced species has bred in the city area in a wild state on at least two occasions: Adel dam, 1956, and Pauls Pond, 1957. Flocks of birds from Harewood Park, and other West Riding breeding colonies, have flown over the suburbs and visit Eccup Reservoir from time to time during the winter—over 300 having been seen on occasion. Smaller flocks have also appeared in August and September. One was on the River Aire near Kirkstall on May 6th, 1950, and Pauls Pond has also been visited. Two were at Knostrop in December 1957.

84. MUTE SWAN; *Cygnus olor*.

A few pairs (some pinioned) breed on small ponds, mill dams, etc., in the area, and small flocks are occasionally seen in flight. Six visited Headingley filter beds in February 1955, and both Eccup Reservoir and Knostrop sewage farm have been occasionally visited in the winter months.

85. WHOOPER SWAN; *Cygnus cygnus*.

A rare winter visitor to Eccup Reservoir, usually in hard weather. Thirty-two were present on January 5th, 1947, and forty-six on December 29th, 1948. Denny mentioned the occurrence of one at Kirkstall in 1837.

86. BEWICK'S SWAN; *Cygnus bewickii*.

This rare winter visitor was not recorded in the area until January 4th, 1948, when six were seen on Eccup Reservoir. Six were also noted there on December 29th in the same year. A flock of 21 briefly visited the reservoir in November 1957.

91/2. BUZZARDS; *Buteo buteo/lagopus*.

An occasional wanderer to the area.

Denny recorded that they formerly occurred at a Black Hill (Adel) rabbit warren. A specimen of *lagopus* was shot in Meanwood in November 1888.

Recent records include two seen soaring over Roundhay on August 30th, 1947, two soaring over Moortown on September 3rd, 1951, and a single bird over Beeston in January 1956.

93. SPARROW-HAWK; *Accipiter nisus*.

Only occasionally reported in the area though odd breeding records are known. There was a nest at Moortown in 1900 and breeding has been reported in Bramley Fall woods in the past. A pair nested near Adel dam in 1956.

95. KITE; *Milvus milvus*

Denny (1840) remarked that this species was then very rare in the area, but he suggested that Gledhow might well have been a breeding site. "Glead" was apparently a dialect name for the bird, but Nelson suggested that this could also apply to the Buzzard.

100. HEN HARRIER; *Circus cyaneus*.

A very rare vagrant. A "ring-tail" was seen at Rodley sewage farm on November 9th, 1957.

103. OSPREY; *Pandion haliaetus*.

A very rare migrant.

One was present at Eccup Reservoir for several days in early May 1947.

104. HOBBY; *Falco subbuteo*.

Nelson mentions a bird which occurred at Killingbeck in 1853.

107. MERLIN; *Falco columbarius*.

Very rarely recorded on the outskirts, usually in autumn, but one was shot at Moortown in May 1900.

110. KESTREL; *Falco tinnunculus*.

A regular breeding bird in the city area, probably two or three pairs nesting each year in ventilator holes or similar sites on buildings. Leeds Town Hall clock-tower, Skelton Grange power station, Kirkstall Abbey and Joshua Wilson's warehouse in Wellington Street have been among the favoured situations—the first-named being quite a regular nesting haunt in recent years. Single birds are consequently not uncommon over the city streets, and a hovering Kestrel is quite a common sight on the outskirts.

111. RED GROUSE; *Lagopus scoticus*.

Occasionally wandering birds are reported on northern outskirts, such as Shadwell, Alwoodley and Eccup.

115. RED-LEGGED PARTRIDGE; *Alectoris rufa*.

Apparently established in one or two localities, this introduced game bird has been reported as breeding at Shadwell, Knostrop and in Gotts Park, Armley.

116. PARTRIDGE; *Perdix perdix*.

This game bird breeds in a few rural areas within the boundary. Small parties wander outside the breeding season, odd birds sometimes penetrating the suburbs and are reported from gardens and allotments.

117. QUAIL; *Coturnix coturnix*.

This uncommon bird has been reported once within the city limits. A nest containing one egg was found on an allotment at West Park in June 1952; the birds had been heard earlier in the year.

118. PHEASANT; *Phasianus colchicus*.

Some birds breed regularly in parkland in several areas and occasionally in the suburbs where a pair nested on Oakwood playing fields. Single birds wander into the suburbs in winter, and more rarely into the built-up areas, even to the timber yards near Crown Point bridge.

120. WATER RAIL; *Rallus aquaticus*.

Only rarely reported in this area.

Two or three were seen by the Roundhay Park lakes during hard weather in 1878. There are isolated records from marshy zones, while on October 9th, 1957, one was found stunned in Harehills and later released; probably a night migrant which had hit overhead wires.

125. CORNCRAKE; *Crex crex*.

This summer visitor is only rarely reported now in the agricultural area where it was once more common. Allis (1844, in Nelson) stated that it was frequently met with near Leeds. In the early part of this century birds could be heard calling in the Meanwood area prior to the building of the estate. It was heard near Alwoodley in 1953, 1954 and 1956 and at Knostrop in the spring of 1954. One was seen near Colton in August 1957.

126. MOORHEN; *Gallinula chloropus*.

This species breeds near quite a few small becks, and in considerable numbers on the decreasing sludge lagoon at Knostrop sewage farm. Numbers there increase in winter, approaching 100 in hard weather.

127. COOT; *Fulica atra*.

A breeding resident in numbers limited by the availability of suitable habitat. In winter small parties have been noted on Eccup Reservoir, Roundhay Park lakes and at Knostrop. It appears now to be less frequent at the first-named than twenty years ago.

131. OYSTERCATCHER; *Haematopus ostralegus*.

Single birds have been recorded in recent years. Eccup Reservoir has attracted odd birds in February and March; there is a May record from Knostrop sewage farm, while three were seen flying upriver at Kirkstall on April 10th, 1952; all probably birds passing to their breeding areas. Two were at Eccup in August 1957. Isolated birds have been heard or seen in flight over the suburbs, occasionally during the hours of darkness.

133. LAPWING; *Vanellus vanellus*.

Breeding records are well spread in suburban farmland. Flocks, as large as 600, are reported near Eccup Reservoir and in riverside meadows in the autumn. About 1,000 were present at Knostrop sewage farm on January 9th, 1955. Such numbers must include immigrant birds, possibly from abroad.

134. RINGED PLOVER; *Charadrius hiaticula*.

A passage migrant in small numbers, mainly in May and in August and September. Knostrop sewage farm has provided the bulk of the records, but Eccup Reservoir occasionally attracts a small flock. Winter records are rare but Knostrop had a single bird in December, 1955.

135. LITTLE RINGED PLOVER; *Charadrius dubius*.

One record only of this summer visitor which has recently established itself as a breeding bird in Yorkshire on a small scale. Two birds were seen at Knostrop sewage farm on August 19th, 1955.

139. GREY PLOVER; *Charadrius squatarola*.

A rare wader inland, the only record being a bird in breeding plumage which flew west over Eccup Reservoir on August 4th, 1953.

140. GOLDEN PLOVER; *Charadrius apricarius*.

Small flocks may occasionally be seen on fields in the outskirts outside the breeding season, very often in the company of Lapwings. Spring flocks tend to be the larger, occasionally attaining c. 500.

142. DOTTEREL; *Charadrius morinellus*.

Denny recorded the occurrence of a bird of this species at Killingbeck on May 27th, 1839. It is a very rare passage migrant.

143. TURNSTONE; *Arenaria interpres*.

An uncommon passage migrant in the area. One was at Eccup Reservoir in January 1947 and three were there on August 30th, 1953. Up to five were present at Knostrop sewage farm in May 1955, and two were seen there on August 27th in the same year.

145. SNIPE; *Capella gallinago*.

This species is known to breed in several marshy areas and, in the past, nested near Wortley Beck. Numbers increase from August onwards at such places as Golden Acre Park marsh, and Knostrop sewage farm. A nestling ringed at Adel in May 1916 was recovered in Headingley in September 1921.

147. JACK SNIPE; *Lymnocyrtus minimus*.

A winter visitor to some marshy areas from October onwards, small numbers being quite regular at Knostrop sewage farm.

148. WOODCOCK; *Scolopax rusticola*.

This species is only rarely reported inside the boundary, usually in the winter months though a pair bred by the River Aire near Newlay in 1957. Templenewsam woods, Roundhay Park Middleton, Eccup, Alwoodley, Pauls Pond and, more rarely, the suburbs have produced single birds in winter.

150. CURLEW; *Numenius arquata*.

Isolated pairs have bred just outside the city boundary, and breeding has often been suspected inside the area. Small parties are occasionally seen in flight, usually flying up-river in the autumn; more rarely they have been heard calling over the city during the hours of darkness.

151. WHIMBREL; *Numenius phaeopus*.

A rare passage migrant that has been recorded very occasionally at Eccup Reservoir in early autumn.

154. BLACK-TAILED GODWIT; *Limosa limosa*.

This rare vagrant has only been recorded on one occasion. One was seen in flight near Knostrop sewage farm on August 3rd, 1942.

155. BAR-TAILED GODWIT; *Limosa lapponica*.

There are only two records of this uncommon inland migrant, both at Eccup Reservoir. One was noted on September 27th, 1946, the other on August 8th, 1953.

156. GREEN SANDPIPER; *Tringa ochropus*.

This migrant wader has been recorded irregularly at Eccup Reservoir, and the sewage farms at Rodley, Horsforth and Knostrop in the autumn months, isolated birds persisting into mid-winter on occasion in recent years. There are single spring records from Knostrop in 1952, 1956 and 1957, with three birds present on March 20th, 1955.

There is an August record from Golden Acre Park marsh. It was formerly regarded as a comparatively rare species, an isolated record of a bird shot at Temple Thorpe in October 1839 being quoted by Allis (1844, in Nelson).

157. WOOD SANDPIPER; *Tringa glareola*.

A bird at Knostrop sewage farm on September 23rd, 1951, appears to be the only record of this uncommon passage migrant.

159. COMMON SANDPIPER; *Tringa hypoleucos*.

A not uncommon bird at times of passage, particularly at Eccup Reservoir and Knostrop sewage farm. It has also been heard calling over the city at night.

Pairs have bred on the banks of the reservoir, recently near the Waterloo lake in Roundhay Park, and probably at Knostrop some years ago. In 1950 two birds were seen on the river bank near Kirkstall power station for a fortnight.

161. REDSHANK; *Tringa totanus*.

There are usually several breeding pairs in the low lying land around Knostrop and a pair has also nested on Eccup Moor. Odd birds can occasionally be seen along the river away from urban areas, but most appear to leave the area during the winter months.

165. GREENSHANK; *Tringa nebularia*.

Occasionally reported during the migration periods, though only rarely in spring. Knostrop sewage farm is the most likely area to attract single, possibly more, birds in autumn. Eccup Reservoir has provided isolated spring and autumn records, and

Golden Acre Park marsh has been visited. In mid-August 1953 one was seen and heard calling over Woodhouse.

169. KNOT; *Calidris canutus*.

A rare vagrant.

There are two records only. Denny mentions "a pair" which occurred at Killingbeck in 1839. A bird was present at Knostrop sewage farm on August 17th, 1955.

171. LITTLE STINT; *Calidris minuta*.

There is only one record of this uncommon migrant. Three birds occurred at Knostrop sewage farm on September 28th and 29th, 1957.

178. DUNLIN; *Calidris alpina*.

A regular passage migrant in small numbers in autumn, irregular in spring. Small parties have also been recorded at other times, usually in December. Eccup Reservoir, Knostrop and Rodley sewage farms are the sources of these records.

181. SANDERLING; *Crocethia alba*.

One was reported from Eccup Reservoir in July 1950, and up to three were seen at Knostrop sewage farm in May 1955, with a single bird in August 1957. A rare passage bird.

184. RUFF; *Philomachus pugnax*.

This passage migrant occurs irregularly in very small numbers, both Eccup Reservoir and Knostrop sewage farm having been visited. The latter has also retained birds into mid-winter.

187. GREY PHALAROPE; *Phalaropus fulicarius*.

One was present at Eccup Reservoir on October 1st, 1947. Yet another rare migrant only once recorded in the area.

188. RED-NECKED PHALAROPE; *Phalaropus lobatus*.

A bird was recorded on Holbeck Moor in 1823, though Denny did not quote the circumstances surrounding the appearance of this most uncommon passage bird.

195. POMARINE SKUA; *Stercorarius pomarinus*.

A tired bird, considered to be an immature bird of this species, was recorded at Eccup Reservoir on November 18th, 1946, presumably having been wind-drifted inland from its coastal migration route.

198. GREAT BLACK-BACKED GULL; *Larus marinus*.

Occasionally noted in small numbers, rarely more, from autumn to early spring. Usually at Eccup Reservoir or in the Aire valley, but sometimes on open grassland in the suburbs. Possibly more common in recent years.

199. LESSER BLACK-BACKED GULL; *Larus fuscus*.

This species can be found in small numbers at most times of the year at Eccup Reservoir where it becomes numerous in the autumn. Sewage farms, tips, playing fields and golf courses also attract fair numbers during this period when immature birds abound. The darker mantled Scandinavian race has been recorded occasionally in winter.

200. HERRING GULL; *Larus argentatus*.

This species winters in the area in numbers which appear to vary with the severity of weather conditions. Sewage farms and tips attract scavenging birds which use the winter gull roost at Eccup Reservoir. This roost is known to include representatives of the Scandinavian race, and a bird shot in Leeds in February 1940 had been ringed off the coast of North Russia in the previous breeding season. Recently formed ash pits at Knostrop sewage farm have also provided a popular roost for this species, some immatures of which appear to summer there.

201. COMMON GULL; *Larus canus*.

A numerous winter visitor to suitable parts of the area, sometimes being seen feeding along the river in the city centre. It forms a fair proportion of the Eccup gull roost.

It appears to be increasingly noted during the summer months, though only in small numbers.

203. ICELAND GULL; *Larus glaucoideus*.

Four birds have occurred in mid-winter at Eccup Reservoir and the species may therefore be described as a rare hard-weather visitor. Single birds were reported on February 26th, 1938, January 4th, 1947, January 29th, 1949, and December 23rd, 1957.

207. LITTLE GULL; *Larus minutus*.

A very rare passage migrant in the district. One was recorded at Eccup Reservoir on October 14th, 1950.

208. BLACK-HEADED GULL; *Larus ridibundus*.

A resident breeding species which, in winter, roosts at Eccup Reservoir and whose numbers are then greatly augmented by the arrival of birds from Scandinavia.

There is a record of a few pairs nesting "in a marshy field by the River Aire" in 1881 and 1882 and small numbers have occasionally been reported as breeding at Rodley sewage farm in recent years. Disturbance of other Aire valley colonies may well have led to the establishment of a variable breeding colony at Knostrop sewage farm in 1949. In 1955 c. 500 pairs were involved but increasing industrial disturbance has since much reduced this number.

Outside the breeding season, birds are seen in large numbers flying to and from the Eccup roost over the city, temporary resting places being established on playing fields and golf courses on the flight lines. During the day birds feed along the river, even in the centre of the city. Eccup Reservoir also attracts large numbers of birds which feed in the Vale of York and south of the city (see *Naturalist*, January-March 1956). The winter roost has been estimated to attain 30,000 at times, but usually is between 10,000 and 20,000 at its peak.

211. KITTIWAKE; *Rissa tridactyla*.

Single vagrants have been recorded at Eccup Reservoir in May and August, but the species is most uncommon. One was found dead in Beeston in December 1946. More essentially a sea bird than other gulls.

212. BLACK TERN; *Chlidonias niger*.

An occasional passage migrant in small numbers, usually seen at Eccup Reservoir or Knostrop sewage farm in May and August. May 1954 however was a feature with thirty-five at Eccup on the 10th, though only eight were there the previous day. One was shot at Kirkstall in 1842.

215. GULL-BILLED TERN; *Gelochelidon nilotica*.

Nelson mentioned a bird of this species which "was taken alive in a reservoir belonging to a mill on the York Road near Leeds" in July 1843.

217/18. COMMON/ARCTIC TERN; *Sterna hirundo/macrura*.

Both species have been reported on passage from Eccup Reservoir, as have unspecified birds, in May and June, and again in August and September. Ten Arctics were at Eccup in May 1947; this appears to be the largest flock yet seen in the area. Terns also visit Knostrop sewage farm on rare occasions in the autumn. Denny mentions their occurrence there in 1833, and a Common was found dead there in October 1957. One was seen over Roundhay Park lake in October 1881.

222. LITTLE TERN; *Sterna albifrons*.

A very rare passage migrant.

One was seen at Knostrop sewage farm on May 1st, 1952.

223. SANDWICH TERN; *Sterna sandwicensis*.

Another very rare passage tern.

One flew over the University in a westerly direction on September 24th, 1957.

226. LITTLE AUK; *Alle alle*.

Early in 1895 storms caused many inland records of this species, and Nelson mentions its occurrence in Leeds. A bird was seen at Eccup Reservoir in April 1950 and another was found dead there in November 1957.

231. PALLAS'S SANDGROUSE; *Syrrhaptes paradoxus*.

During one of the nineteenth century irruptions of this species, a single bird was shot in Dewsbury Road in May 1888. This is the only record.

232. STOCK DOVE; *Columba oenas*.

Not uncommon as a breeding bird in the area; there are nesting records in old timber, often in parkland. Small numbers occur in flocks in the autumn when they mix with Wood Pigeons.

234. WOOD PIGEON; *Columba palumbus*.

A common breeding bird in many plantations and parkland, flocking in considerable numbers in the winter months.

235. TURTLE DOVE; *Streptopelia turtur*.

An uncommon summer visitor. A pair nested at Knostrop in 1955, and birds have been seen at Shadwell, Seacroft and near Eccup.

237. CUCKOO; *Cuculus canorus*.

A summer visitor to the area in small numbers, arriving at the end of April or early May and seldom being seen after August.

241. BARN OWL; *Tyto alba*.

An occasional breeding bird on the outskirts in the agricultural areas. In winter isolated birds penetrate into the suburbs.

246. LITTLE OWL; *Athene noctua*.

Not a common bird but occasionally reported from outlying farmland. It has bred at Alwoodley, Seacroft, Whitkirk, Knostrop and Middleton woods.

247. TAWNY OWL; *Strix aluco*.

The commonest breeding owl of the area, nesting both in the agricultural zone and the suburbs. Pairs have nested, among other places, in Chapel Allerton, near Hyde Park, at Kirkstall and Weetwood. In winter wandering birds occasionally penetrate the built-up area, one having been heard in Woodhouse Square.

248. LONG-EARED OWL; *Asio otus*.

This species was described by Denny as being not uncommon, particularly in the eastern part of the area, in the early nineteenth century. The only record in recent years was one at Templenewsam in 1948.

249. SHORT-EARED OWL; *Asio flammeus*.

Denny reported it as having occurred at Killingbeck. Though the bird remains uncommon, one was seen near Beeston in the spring of 1944 and one at Knostrop in March 1946.

252. NIGHTJAR; *Caprimulgus europaeus*.

A very occasional migrant in suitable habitats from time to time.

255. SWIFT; *Apus apus*.

A well distributed breeding summer visitor, arriving early in May and departing in August. Breeding sites are usually in older buildings, often well into the built-up area, which regularly attract a small group of birds.

258. KINGFISHER; *Alcedo atthis*.

A fairly regular breeding bird in isolated places near water. The higher reaches of Meanwood beck and the banks of Waterloo lake have attracted nesting pairs in recent years. Single birds tend to wander in hard winter weather.

261. HOOPOE; *Upupa epops*.

A rare summer visitor only twice recorded. A bird of the year was shot at Eccup in October 1830, and one frequented the garden of Stairfoot House, Adel, from April 22nd-29th, 1946.

262. GREEN WOODPECKER; *Picus viridis*.

Not uncommon in parkland, there being nesting records from Roundhay, Templenewsam, Alwoodley and Middleton.

263. GREAT SPOTTED WOODPECKER; *Dendrocopus major*.

This bird is quite commonly recorded in the public parks, and in other areas of old timber. Nesting records come from Roundhay, Templenewsam, the Hollies and Middleton. Occasionally visits suburban gardens in winter.

264. LESSER SPOTTED WOODPECKER; *Dendrocopus minor*.

This species has occurred in Roundhay and Templenewsam parks in both of which single pairs have bred. It has occasionally been noted in Middleton woods in winter. Nelson records that the bird also bred near Eccup and in "Batley Wood, now a Leeds recreation ground". This is probably Batty's wood, part of Woodhouse Ridge.

265. WRYNECK; *Jynx torquilla*.

Denny, in 1840, recorded this bird as having formerly been tolerably frequent near Leeds. It has not been recorded in the area during the present century.

271. WOODLARK; *Lullulu arborea*.

There are isolated records of this rare lark from the Killingbeck area in 1832 and 1840. Two were recorded near Shadwell in March, 1950.

272. SKYLARK; *Alauda arvensis*.

A common breeding species in the agricultural zone and occasionally in rough grassland in the suburbs. Single birds are noted in song over some urban parkland such as Woodhouse Moor. Quite substantial flocks are seen outside the breeding season, sometimes passing over urban areas.

274. SWALLOW; *Hirundo rustica*.

A summer visitor nesting in considerable numbers under the roofs of suitable buildings, often agricultural in type, and only rarely in built-up areas. A pair did however nest near Hyde Park in 1953 and 1954. Birds pass along the Aire valley at times of migration, occasionally up to the end of October.

276. HOUSE MARTIN; *Delichon urbica*.

A rather localised breeding summer visitor, encroaching a little farther into

urban areas than the preceding species. Birds also tend to stay a little longer, November sightings being not uncommon.

277. SAND MARTIN; *Riparia riparia*.

The earliest of the hirundines to arrive in spring, passing through the area. A few pairs form a nesting colony in the banks of the Aire near Knostrop.

280. CARRION CROW; *Corvus corone*.

A well distributed breeding bird, solitary pairs nesting in many suitable wooded areas. Nests are reported from many of the parks. Small parties wander in winter.

281. HOODED CROW; *Corvus cornix*.

Though never abundant it is now only occasionally recorded in the winter months. Single birds were seen near Eccup in October 1952 and 1953. Two were noted at Knostrop in March 1955, and one near Golden Acre Park in April 1957.

There is a record of a pair nesting at Gledhow in 1878.

282. ROOK; *Corvus frugilegus*.

This species breeds in colonies, mainly in the northern part of the area. Several of these rookeries are well inside the suburbs near the Modern School, in Meanwood, and in Chapeltown. The Leeds and District Bird Watchers' Club 1955 census showed that the number of breeding pairs in the 15 rookeries within five miles of the City centre (not all within the boundary) had increased by almost 38% since the 1945 National census.

In winter many birds join communal roosts outside the city area, and flight lines from roost to feeding area in the early morning and in the reverse direction before dark have been traced. The principal flight line enters the area from the east at Shadwell and passes on a broad front over Roundhay, Moortown, Meanwood, Headingley and Kirkstall and departs over Horsforth; the birds returning on a similar track in the afternoon. This passes over that part of the city containing the majority of the rookeries.

Considerable numbers of Jackdaws are associated with these flight lines.

283. JACKDAW; *Corvus monedula*.

A common breeding bird in many suburban districts. Most of these birds remain near the breeding sites all year round. Flight lines (see Rook) cross the city area in winter, but whether any local birds join these flocks has not been established.

284. MAGPIE; *Pica pica*.

Many pairs nest in agricultural and suburban areas, and breeding has often been recorded in trees nearer the city centre, notably Woodhouse Ridge, Woodhouse cemetery, Beckett Street cemetery, Hyde Terrace and Cross Flatts park. Flocks in winter occasionally attain a fair size, rarely however as large as the c. 50 seen at Adel in January 1880, or c. 40 at Roundhay in March 1949.

285. NUTCRACKER; *Nucifraga caryocatactes*.

A rare winter visitor. Two were seen on a chimney pot in Beeston on April 27th, 1951. On November 1st, 1955, three such birds were noted in the conifer plantation at Eccup Reservoir.

286. JAY; *Garrulus glandarius*.

A well distributed resident in many wooded areas.

288. GREAT-TIT; *Parus major*.

Common throughout the area, often nesting in old parkland timber and in gardens.

289. BLUE-TIT; *Parus caeruleus*.

A very common breeding bird of the city parks and gardens. In winter small parties occasionally penetrate into the city itself, having been seen in the Headrow, Albion Street, St. John's Churchyard, etc.

290. COAL-TIT; *Parus ater*.

Quite common and well distributed, but less well known in suburban gardens than the previous two species.

292/3. MARSH AND WILLOW-TITS; *Parus palustris/atricapillus*.

Both species have been recorded as nesting but are only locally distributed. The former appears to be the commoner, particularly north of the city.

294. LONG-TAILED TIT; *Aegithalos caudatus*.

This species is a localised breeder in small numbers, particularly in the more suitable wooded areas in the north. Nesting has occurred as far into the urban area as Gledhow valley. Flocks tend to wander in winter, only rarely penetrating far into the suburbs. The species tends to suffer badly in very hard weather.

296. NUTHATCH; *Sitta europaea*.

A very local breeding bird rarely moving far from its nesting haunts. Old timber

in Roundhay and Templenewsam parks, in Gledhow valley and at Eccup has attracted nesting pairs.

298. TREE-CREEPER; *Certhia familiaris*.

A moderately common breeding bird in old-timbered parkland. Often seen with flocks of titmice in winter when it occasionally visits suburban gardens.

299. WREN; *Troglodytes troglodytes*.

A widely distributed breeding species in fair numbers, usually where undergrowth is plentiful. It has bred on Woodhouse Moor.

300. DIPPER; *Cinclus cinclus*.

This species has been reported along several streams in the northern part of the area, notably Adel and Meanwood becks, Horsforth beck and, in winter, an odd bird has appeared at Eccup Reservoir and by the Roundhay Park lakes.

Rarely seen in the south of the area.

301. MISTLE-THRUSH; *Turdus viscivorus*.

A well distributed breeding bird in the suburban and agricultural areas. In the city odd pairs have nested (or attempted to nest) in Cross Flatts park, on Woodhouse Moor, in St. John's Churchyard, and near the University.

302. FIELDFARE; *Turdus pilaris*.

A not uncommon winter visitor in the rural areas, at times of movement occasionally flying over the city centre in flocks.

303. SONG-THRUSH; *Turdus philomelos*.

A fairly widespread resident in all but the most urban areas.

304. REDWING; *Turdus musicus*.

A winter visitor in smaller numbers than Fieldfare, but tends to penetrate wooded areas to a greater extent. In very hard weather this species has moved into suburban gardens, and occasionally into urban areas. It is not uncommon for this migrant species to be heard calling over built-up areas, even in the city centre, during the hours of darkness in early winter months.

307. RING-OUSEL; *Turdus torquatus*.

Very rarely recorded on passage through the city. Nelson reported that one was "obtained at Leeds in December 1881", presumably a bird attempting to winter in the area. A bird was seen at Rodley sewage farm in late September 1957.

308. BLACKBIRD; *Turdus merula*.

A very common resident throughout the area, numbers being increased by immigrants in the winter. It is only absent from the most urban districts.

311. WHEATEAR; *Oenanthe oenanthe*.

This species is not uncommonly seen during spring and autumn passage, usually on farmland or golf courses, but occasionally in the outer suburbs. It is only rarely seen in the urban areas, but has been noted on Woodhouse Moor.

At the end of the nineteenth century it was known to have nested at Adel and in the Eccup area.

317. STONECHAT; *Saxicola torquata*.

A bird of very irregular occurrence.

A pair were seen carrying food on Adel Moor in 1900 and 1901, while, in February 1890, a bird was seen by the Otley Road in Headingley. In October 1934, single birds of both sexes were seen at Eccup. A pair nested on waste land near Beeston in 1943. A single bird was seen near Beeston ring road in January 1950.

318. WHINCHAT; *Saxicola rubetra*.

A breeding summer visitor in very small numbers and only in the few suitable areas such as Knostrop sewage farm, Roundhay Park, near Golden Acre Park, and on waste ground near Beeston. Nelson included nesting records from inside the earlier city boundary. In the autumn, migrant birds are to be seen at Rodley and Knostrop sewage farms, and occasionally elsewhere.

320. REDSTART; *Phoenicurus phoenicurus*.

A fairly numerous summer resident in the more rural public parks and some other woodland areas. In the autumn odd birds pass through suburban gardens.

321. BLACK REDSTART; *Phoenicurus ochruros*.

Nelson mentions this bird's occurrence at Osmondthorpe in 1843. In early April 1952, a bird was reported from gardens in Shadwell. It is a most uncommon visitor to the area.

322. NIGHTINGALE; *Luscinia megarhynchos*.

This very rare summer visitor has only twice been recorded within the present

boundary. In 1849 one was recorded at Killingbeck and, in 1879, a single bird was heard in Moseley Wood, Cookridge.

325. ROBIN; *Erithacus rubecula*

A widespread resident in fair numbers, occurring in all but the most urban districts.

327. GRASSHOPPER WARBLER; *Locustella naevia*.

An irregular and uncommon summer visitor, breeding in only one locality in recent years, Golden Acre Park or nearby Breary marsh. This may possibly be the "Adel" nest situation mentioned by Nelson, who also recorded breeding in Roundhay Park. Single birds were seen at Eccup in April 1948 and at Rodley sewage farm in the autumn of 1957.

333. REED-WARBLER; *Acrocephalus scirpaceus*.

Small numbers were reported from the area of Adel Dam in 1929 and 1930, but this summer visitor is very rare in the area.

337. SEDGE-WARBLER; *Acrocephalus schoenobaenus*.

A summer visitor, nesting in suitable localities along the banks of the Aire, particularly near sewage farms.

Isolated pairs have bred in other similar areas such as Golden Acre Park marsh, near Seacroft hospital and near Beeston.

343. BLACKCAP; *Sylvia atricapilla*.

A localised summer visitor breeding sparsely in a few parks and other areas where there is dense undergrowth. Only rarely seen in other habitats, usually in autumn.

346. GARDEN-WARBLER; *Sylvia borin*.

Found in similar localities to the previous species but not common. Once recorded in Middleton woods. A summer resident in small numbers.

347. WHITETHROAT; *Sylvia communis*.

A well distributed summer breeder in suitable habitats, including some areas in the suburbs. In the autumn it is reported from gardens and along the river banks.

348. LESSER WHITETHROAT; *Sylvia curruca*.

A very scarce summer visitor. Breeding has only once been recorded in the area, at Roundhay Park in 1938. Single birds have been noted on Alwoodley golf course, and at Knostrop.

354. WILLOW-WARBLER; *Phylloscopus trochilus*.

A common summer visitor in the rural areas, nesting in a variety of situations. First arrivals appear in mid-April, occasionally earlier. After the breeding season this species is not uncommon in urban gardens to within a mile of the city centre.

356. CHIFFCHAFF; *Phylloscopus collybita*.

A summer resident in small numbers, locally distributed in woodland of the older type. Roundhay and Temple Newsam attract a few birds. Occasionally arriving in mid-March but usually a little later, this bird is only rarely reported in the autumn but one was heard in song in Claremont Road, Headingley on September 19th, 1886.

357. WOOD-WARBLER; *Phylloscopus sibilatrix*.

A scarce summer visitor which breeds, in apparently declining numbers, in Roundhay Park. It has also been noted in the Hollies, at Temple Newsam and in Middleton woods where breeding occurred in 1947.

364. GOLDCREST; *Regulus regulus*.

A regular winter visitor to conifer plantations in the area, occasionally appearing in other types of woodland in the company of tit flocks. Very hard weather has been known to reduce numbers considerably. Small flocks have penetrated into the suburbs, reaching Woodhouse Moor and the Ridge on occasion. Odd pairs have bred in the Eccup area where a few birds can be found at any time of the year.

366. SPOTTED FLYCATCHER; *Muscicapa striata*.

A not uncommon summer resident in suburb, parkland and the agricultural area. It has been recorded as nesting as far into the city as Hillside (Headingley) and Woodhouse Ridge. Several birds have been seen fly-catching from overhead wires on main roads. There is a record of a pair nesting in the bracket of a street-lamp prior to 1820.

368. PIED FLYCATCHER; *Muscicapa hypoleuca*.

An uncommon bird in the area during the breeding season though odd pairs have nested in Roundhay Park. It has occasionally been reported during times of passage from other, mainly wooded, areas.

371. HEDGE-SPARROW; *Prunella modularis*.

A common resident in all but the most urban areas.

373. MEADOW-PIPIT; *Anthus pratensis*.

A breeding bird limited in numbers by the suitability of habitats. In the autumn considerable numbers occur at sewage farms on passage, some birds remaining during the winter months.

376. TREE-PIPIT; *Anthus trivialis*.

A scarce summer visitor, breeding in small numbers in only a few wooded localities.

380. PIED/WHITE WAGTAIL; *Motacilla alba*.

The former is a quite well distributed resident, breeding in a variety of situations, not always near water. It is not uncommonly seen flying over the city area out of the breeding season, and numbers at sewage farms are considerable in autumn. In winter birds may be seen near the river and more rarely in the city itself. The latter is a rare passage migrant, more usually noted in early spring.

381. GREY WAGTAIL; *Motacilla cinerea*.

This bird occurs in small numbers in suitable streamside habitats. Breeding has been reported from Roundhay Park and some becks in the northern part of the area. In the winter months single birds have occurred on the margins of Eccup Reservoir, at sewage farms and by the river. Meanwood and Wortley becks have also attracted wintering birds.

382. YELLOW WAGTAIL; *Motacilla flava*.

A common passage bird in the spring and autumn, usually away from urban areas but odd birds have been heard over the city. Breeding occurs not uncommonly in suitable agricultural habitats, and more occasionally in rough suburban land and on waste ground such as that along Wortley beck.

383. WAXWING; *Bombycilla garrulus*.

A spasmodic winter visitor in small numbers. The area has very occasionally been visited during winter influxes, the first reference being in 1702/3.

A flock of c. 35 at West Park in mid-March 1950 appears to have been the largest in recent winters. Small numbers were reported in the north of the area from November 1957 to January 1958.

384. GREAT GREY SHRIKE; *Lanius excubitor*.

A rare winter visitor with two unusual records in summer. A bird was at Adel in June 1885 and another at Alwoodley in June 1942. A more appropriate date for one to be seen was January 1890 in Middleton woods.

388. RED-BACKED SHRIKE; *Lanius collurio*.

Early in the last century this was not an uncommon bird on the eastern side of the area. There were, at that time, breeding records just outside the present city boundary. Since 1900 however there appears to be only one record, that of a cock bird in Headingley in June 1944.

389. STARLING; *Sturnus vulgaris*.

A very common resident in all areas. Flocks in winter in the agricultural area are certainly augmented by immigrants from abroad as has been proved by ringing recoveries. There is no large scale roost in the city area comparable with those in Bradford or Huddersfield, but small temporary gatherings have been reported from time to time.

391. HAWFINCH; *Coccothraustes coccothraustes*.

An occasional breeder in one or two localities at the present time. A pair nested in Roundhay Park in 1878, in Hawskworth Wood in 1894, in the Hollies in 1952, and near Five Land Ends, Adel, in 1953. Birds have also been seen outside the breeding season in Templenewsam Park, and at Newlay, Whitkirk, Headingley and on Woodhouse Ridge.

392. GREENFINCH; *Chloris chloris*.

A common resident, breeding in both agricultural and suburban areas. Considerable flocks are seen in winter on farmland. The species has regularly been seen on the Headingley Rugby League ground in hard weather when straw has been used to protect the playing area.

393. GOLDFINCH; *Carduelis carduelis*.

A scarce bird with a few breeding records at Meanwood, Roundhay and Headingley. Parties are occasionally seen in winter months on waste ground, railway embankments, etc. Small flocks were reported in Meanwood Road in 1878 and 1955 and 15 were seen near Alwoodley in April 1939.

394. SISKIN; *Carduelis spinus*.

Past records indicate that this species occurs infrequently in small numbers, the

banks of the river having attracted birds from time to time. A small party was seen in Middleton woods in the winter of 1944.

395. LINNET; *Carduelis cannabina*.

A common breeding bird in the rural area, particularly in gorse. Odd pairs occasionally nest in suburban gardens. Winter flocks are to be found on farmland.

396. TWITE; *Carduelis flavirostris*.

Nelson records that nests were found on Adel Moor in the nineteenth century, but there are no recent records.

397. REDPOLL; *Carduelis flammea*.

This species breeds in small numbers in conifer plantations in the north of the area, and small spring and autumn flocks are on record. The Continental race (*c.f. flammea*) has been noted in winter on odd occasions.

401. BULLFINCH; *Pyrrhula pyrrhula*.

Very locally distributed as a breeding bird but small parties occur more widely in the autumn, frequently visiting suburban gardens.

404. CROSSBILL; *Loxia curvirostra*.

No recent records but the species was seen at Killingbeck early in the last century and in 1839 a party was seen in Meanwood Woods. A rare visitor probably coinciding with irruptions from their European breeding areas.

407. CHAFFINCH; *Fringilla coelebs*.

A widespread resident particularly in rural areas but pairs breed well into the suburbs including Woodhouse Moor. Considerable flocks are to be found on farmland in the winter months.

408. BRAMBLING; *Fringilla montifringilla*.

A regular winter visitor to rural areas and occasionally to some of the parks. It is however rare in the suburbs though isolated parties have been noted in flight. Numbers fluctuate considerably from year to year.

409. YELLOWHAMMER; *Emberiza citrinella*.

A well distributed breeding bird in the agricultural zone. Young birds occasionally appear in suburban gardens in the autumn, and small flocks tend to wander in winter.

410. CORN-BUNTING; *Emberiza calandra*.

A few pairs regularly nest to the east of the city but the bird is little known elsewhere. It has however bred at Beeston on one occasion.

421. REED-BUNTING; *Emberiza schoeniclus*.

Not uncommon in suitable damp habitats, occasionally breeding in drier situations. It appears to move to riverside areas in the winter.

423. SNOW-BUNTING; *Plectrophenax nivalis*.

A very rare winter visitor.

A flock occurred within the city boundary of the period in the winter of 1878/9 and at least one was taken by a bird catcher. On January 21st, 1958, a party of *c.* 70 was flushed from a ploughed field at Black Hill, Adel.

424. HOUSE-SPARROW; *Passer domesticus*.

A widespread and abundant resident in the urban areas, even into the city centre. In the rural zone it is usually restricted to the area of human habitations, but large flocks of young birds can be found among crops in the autumn.

425. TREE-SPARROW; *Passer montanus*.

A locally distributed resident occurring at Knostrop, Seacroft, Roundhay Park, Eccup and Rodley.

Wild Animals and Their Secrets, by Jim Frey. Pp. 230 with 23 illustrations. Frederick Muller, London, 1958.

The author's experience of wild animals relates almost entirely to their capture, training and exhibition in the menagerie and circus. His approach is a humane one, and though it is becoming fashionable to decry exhibitions of performing animals, yet there does seem to exist a considerable bond of respect and affection by most circus folks for their charges which comes much nearer to a true compassion than those schemes for tsetse fly control, clearance for ground-nut cultivation and the large-scale manufacture of vaccines which have a much more unfortunate if less emotionalised effect on animal life as a whole. It is clear from the author's account that selective pressure operates fiercely in the circus world for its activities call for considerable courage and make short work of foolhardiness.

A.H.

SPRING FORAY, WETHERBY, 1958

W. G. BRAMLEY

WITH headquarters at Wetherby some dozen members and friends visited Ribston, Stockeld and Bramham Parks for the Spring Foray on April 12th-15th. At the two former we had the pleasure of being shown round by the owners, who took much trouble and interest in our activities. Too little time, however, was available to do full justice to the large woodland at Ribston. Bramham, which has proved fruitful on other occasions both in spring and autumn, was rather dry, and it was only in the stream bottoms that much was found. Thanks are due to Messrs. Booth and Ellis of the C.M.I. and to W. D. Graddon for lists and help in determination.

B = Bramham.

R = Ribston.

S = Stockeld.

† not in Mason & Grainger's *Catalogue of Yorkshire Fungi*.

* Not in Mason & Grainger's *Catalogue of Yorkshire Fungi* for V.C. 64.

Numbers after species are accession numbers at C.M.I.

PYRENOMYCETES

† *Chaetosphaeria innumera* Tul., on *Quercus*, S. 72833.

Nectria mammoidea Phill. & Plowr., on *Ulmus*, R. 72789.

† *N. magnusiana* Rehm., on *Betula*, B.

DISCOMYCETES

† *Dasyscypha brevipila* Le Gal., on *Acer*, S.

† *Eriopeziza caesia* (Pers.) Rehm., on *Quercus*, R.

† *Helotium vernalis* Dennis, on *Salix*, B.

* *Pyrenopeziza mercurialis* (Fuckel) Boud., S.

* *Tapesia fusca* (Pers.) Fuckel, on *Rhododendron*, B.

* *T. lividofusca* (Fr.) Fuckel, on *Quercus*, R.

HYPHOMYCETES

† *Aspergillus manginii* Roper & Thom., S. 73021.

* *Dactylium dendroides* (Bull.) Fr., on *Polyporus betulinus*, B.

† *Sarcopodium circinatum* Ehrenberg, on *Arctium*, B. 73550.

Species of *Endophragmium* and *Hormiactis* are still not identified.

Insect Engineers: The Story of the Ants of the World, by Ruth Bartlett.

Pp. 120, with drawings by the author. Hutchinson. 9/6.

An inspiring introduction for children, well written, competently and pleasingly illustrated. An introductory chapter on keeping the ants for observation is almost certain to send any enterprising boy (or girl?) in search of sheets of glass, plaster of paris, and—ants.

How to Draw Insects, by Norman Weaver. Pp. 64. Studio, Ltd., 1958. 5/-.

For artistic, not scientific illustrating. The book follows the lines of others in this series. Well-known insects are used as examples and the author stresses the necessity for seeing accurately and in detail all parts of the insects. Brief instructions on how to obtain and prepare specimens are given. Recommended to all would-be illustrators.

Common Names of British Insect and other Pests. Ministry of Agriculture, Fisheries and Food, Technical Bulletin No. 6. H.M.S.O., 1957. 7/6.

Beneficial Insects. Ministry of Agriculture, Fisheries and Food, Bulletin No. 20. H.M.S.O., 1958. 5/6.

The first of these publications contains separate alphabetical lists of scientific and common names with their respective equivalents, and lists of important synonyms and alternative common names. A useful reference work for those concerned with pests of stored products and agriculture where popular names are used by warehousemen and growers. *Beneficial insects* is a short account of the insects predatory and parasitic on agricultural pests, with particular reference to the pests of fruit trees, and includes some good coloured illustrations of a selection of the insects mentioned. The results of recent work in the field of control are summarised, especially the problem of increasing infestation resulting from the use of insecticidal sprays which kill both pest and predator. The red spider mite of the fruit trees is of particular concern. For the naturalist as well as the grower.

BOLETI AND CANTHARELLES IN JAMES NEEDHAM'S HERBARIUM

R. WATLING

SUMMARY.—The Needham herbarium contains four species of boleti and four cantharelles in ten collections of material. Of the former possibly two are critical but the latter are represented by common species. Study of the collections has yielded little information as to the status of *Boletus rostkovii* Fr. and *B. variegatus* B. et Br.; it is suggested that the former is a *Xerocomus*. This opportunity is taken to discuss the relative position of these two species. The other collections of boleti are confirmed as *Xerocomus parasiticus* (Bull. ex Fr.) Quél. and *Porphyrellus pseudoscaber* (Sacc.) Singer, and collections of *Craterellus cornucopioides* (Linn.) Fr. and *Cantharellus aurantiacus* Fr. may be accepted; the latter being now *Hygrophoropsis aurantiacus* (Wulf. ex Fr.) Maire. *Cantharellus infundibuliformis* (Scop.) Fr. and *C. tubaeformis* Fr. are discussed with reference to the available material.

INTRODUCTION.—Unfortunately, the records of all these collections are not backed either by drawings or descriptions, and the dried material, which is very sparse, has kept badly over the years having been devoured by beetles even more than the Gasteromycetes (Palmer, *The Naturalist*, 89-92, 1957). It is unfortunate that Needham did not preserve all his boletoid material, as many rare species are listed in his notes. A few notes or sketches might have been helpful in tracking the true identity of the two doubtful species.

EXAMINATION.—Notes were taken on the specimens *in situ*. The specimens were either firmly glued on cardboard sheets or simply placed in tins. These have now been repacked in transparent envelopes. The specimens were first examined with the naked eye or lens and then with the microscope. The hymenium and cuticle were examined first in distilled water, the structures being recorded. It was observed that the spores were swollen after they had been left for a short period in distilled water. From observations spread over the last year (1956), the writer concluded that spores of agarics and boleti when mounted in a dilute aqueous solution of ammonia and examined after a lapse of time, hardly differed from fresh spore deposits. This process was carried out throughout the examination of the material with successful results. Small parts of the hymenium and cuticle were washed in dilute chloral hydrate solution and re-examined in distilled water. Some parts were re-examined in distilled water after a similar treatment with ammonia solution. Melzer's reagent was used to test for amyloid characters of the spores and hyphae and to colour thin cell walls. The only other stain used during the examination was cotton blue in lactophenol.

A. AGARICACEAE

1. *Hygrophoropsis aurantiacus* (Wulf. ex Fr.) Maire. (Single collection consisting of five specimens.)

High Greenwood, Hebden Bridge, 4/9/1897 det. *Cantharellus aurantiacus* Fr. The material has kept very badly. Beetles have devoured much of the cap and stem tissues. Examination of the hymenium and spores, however, show the specimens to agree with the name given by Needham, although it can be seen that this fungus is not really a true member of the genus *Cantharellus*. The spores are hyaline, elliptical or pip shaped $6-8 \times 3-5\mu$ and are pseudoamyloid. They agree with spore deposits of fresh collections of *Hygrophoropsis aurantiacus* and they are quite different from those met with in the genus *Cantharellus*. The gill structure is identical with that of the true agarics, and not cantharelloid. Needham's collection agrees with fresh material of what is commonly referred to as *Clitocybe aurantiacus*, his name being synonymous. The correct name for this fungus, however, appears to be *Hygrophoropsis aurantiacus* transferred from *Clitocybe* by R. Maire after the reinstatement of Schroeter's segregate genus.

B. CANTHARELLACEAE

2. *Craterellus cornucopioides* (Linn.) Fr. (Two collections, four specimens.)

Collection 1.—Three specimens in which the hymenium has been badly damaged, Mulgrave Woods, Y.N.U. Autumn Foray, Sept. 1910, det. *Craterellus cornucopioides* Pers. They are much smaller than the later collection from the same station

(Collection 2). In size they approach *C. sinuosus* Fr. The spores measure $10-11 \times 6-7\mu$ as in Collection 2 and are of a similar shape. It would appear that these specimens although completely useless may possibly represent immature *C. cornucopioides* (Linn.) Fr.

Collection 2.—A single specimen det. *C. cornucopioides* Pers., Mulgrave Woods, Sept. 1912. This is a typical specimen of the 'Horn of Plenty' *C. cornucopioides* (Linn.) Fr. The specimen agrees very well with fresh collections and the material has kept excellently. The spores are quite typically cantharelloid, being subglobose to globose and hyaline under the microscope. The material examined had spores measuring $10-11 \times 6-7\mu$, differing from Rea's measurements, but agreeing with those of Wakefield and Dennis (1950).

3. *Cantharellus tubaeformis* Fr. Fig. 1. (Single collection.)

4. *Cantharellus infundibuliformis* (Scop.) Fr. Fig. 2. (Single collection.)

DISCUSSION.—Fries distinguished between *C. tubaeformis* and *C. infundibuliformis* mainly by the colour of the fresh sporophore, especially of the stem. In *C. tubaeformis* the stem is described as being orange-fawn (cf. Rea). In *C. infundibuliformis* Fries distinguished the stem as being yellow in colour (cf. Rea). Dennis and Pearson (1948) cited the latter species as a synonym of *C. tubaeformis*. Kühner and Romagnesi also only distinguish one species, but they give a wide spore range. If in fact *C. infundibuliformis* is the same as *C. tubaeformis* then the former must be reduced to a synonym of *C. tubaeformis*, which has priority.

Ricken disagrees, giving spore measurements in support of his claim. He states that the spores of *C. tubaeformis* are $9-10 \times 6\mu$, somewhat thinner and on the whole smaller than the spores of *C. infundibuliformis* which are $10-12 \times 8-10\mu$. In America, Smith appears also to accept two distinct species, *C. tubaeformis* being recorded as having white to white cream spore powder whereas *C. infundibuliformis* has a pale yellow spore mass. One wonders whether Smith is really dealing with the same two European species. From examination of the Needham material it appears that the collection determined as *C. infundibuliformis* Fr. (Crimsworth Dean, Hebden Bridge, Sept. 1912) is quite different from his specimens labelled *C. tubaeformis* Fr. (Midgehole and above Lodge, Hebden Bridge, Oct. 1st, 1896). They differ in spore size and shape, and close examination of the dried sporophores shows small differences. It is unfortunate that Needham did not note the associated trees of his collections. Ricken suggests that *C. tubaeformis* grows under frondose trees whereas the species to which he assigned the name *C. infundibuliformis* is confined to coniferous woodland.

C. tubaeformis in the wide sense is quite variable in colour, the writer having collected very pale forms as well as the typical form, which is uncommon. A distinctly dark form always found under beech or conifers (Hardcastle Craggs, Sept. 1955, Richmond, Sept. 1956, etc.) is reluctantly given the name *C. tubaeformis*, although on examination of fresh sporophores it appears a little different. It agrees with the description of *C. tubaeformis* when considered in the wide sense, but however approaches closely to Needham's material of *C. infundibuliformis*. The spores are a little bigger and globose but the stem is not always concolorous yellow, is often compressed, and the pileus is not always characteristically deeply funnel shaped.

Study of the dried material of *C. tubaeformis* shows that the stem rarely exceeds 2 cm. in length and is often over 5 mm. in width at the thickest part. The stem appears to be compressed and this does not seem to be due to Needham's method of drying. The pileus is multi-lobed, fairly smooth and funnel shaped. The depression is not characteristically deep and is rarely pervious to the hollow stem. The hymenium is orange-brown in colour, the folds being fairly thick and shallow, even merely wrinkles. The folds are some distance apart and are only slightly branched with but few joining veins. The spores are subglobose (—globose) $(7)8-9 (10) \times 6-7\mu$.

Similar measurements of the majority of the mature specimens of *C. infundibuliformis* on the other hand show that the stem of the dried material exceeds 2 cm. and often reaches 2.9 cm. At the thickest part of the stem it rarely exceeds 5 mm. in width. The stem seems to be cylindrical, yet a few specimens exhibit compression. The pileus is rough, especially at the edge. It is funnel-shaped and deeply depressed more often than not pervious to the hollow stem. The hymenium is greyish in colour. The folds are fairly crowded and more branched when compared with the collection

of *C. tubaeformis*, they are also thinner and deeper. The spores are subglobose-globose 9-10 (11, 12) \times 7-9 μ .

The general appearance of the collection of *C. tubaeformis* is much paler in colour than the other species, especially the hymenium which in the two collections is quite different in appearance. The spores are different in size and a little difference might exist in shape. Although the material under observation has dried out completely the comparative stem sizes seem to agree closely with Rea's figures.

Further careful observations are required on the specimens which we automatically call *C. tubaeformis*, without sometimes knowing why, when we meet them on future forays. If these two species are to stand it appears that their correct authorities are *C. tubaeformis* Fr. and *C. infundibuliformis* (Scop.) Fr. *Clitocybe infundibuliformis* (Schaeff.) Fr. is not synonymous with *Cantharellus infundibuliformis* cf. *Hygrophoropsis aurantiaca*.

C. BOLETACEAE

5. *Porphyrellus pseudoscaber* (Secr.) Singer. (Two collections, three specimens.)

Both collections from the Hebden Bridge area, Crimsworth Dean, Sept. 1910, det. *Boletus porphyrosporus* Fr. and Hardcastle Craggs, Sept. 1911, det. *B. porphyrosporus* Fr. The specimens may be discussed together as all agree on examination with *Porphyrellus pseudoscaber* (Secr.) Singer.

Only one specimen in the herbarium is mature. The collection from Hardcastle Craggs furnishes a mature and immature specimen. The Crimsworth material is quite young and originally had a label pinned to it on which was written (presumably by Needham) 'polypore as yet unnamed.' Over this has been written *Boletus porphyrosporus* Fr.—obviously amended by Needham.

The spores of Needham's material are quite typical of *Porphyrellus pseudoscaber*, being the familiar purple-brown, possibly a little faded due to storage. They measure 14-15 \times 6-7 μ and are of the typical shape when compared with fresh spore deposits.

In 1931 E. J. Gilbert proposed the new genus *Porphyrellus* to hold this Friesian species on account of its unusual characters. It is true Bataille twenty-three years earlier had erected the genus *Phaeoporus* to hold this same species. This is, however, unacceptable because of an earlier homonym. Gilbert stated the type of his genus was this species under the name *P. porphyrosporus* but the correct epithet is the previously published *pseudoscaber*. For clearness it must be remarked that Kallenbach also proposed *pseudoscaber*, quite independently for an entirely different species. It was proposed for a member of the *Boletus scaber-carpini* complex.

Its habitat is recorded by Pearson (*British Boleti*, 1950) as coniferous woodland, it can however be found in any type of woodland, coniferous, mixed or purely frondose. (Bankhouse Wood, Halifax, July 1956, *Quercus*; Colden Valley, Hebden Bridge, *Fagus*, etc.)

6. *Xerocomus parasiticus* (Bull. ex Fr.) Quél. (Single collection.)

Hebden Valley, Aug. and Sept. 1905 and 1906, det. *Boletus parasiticus* Bull. There is no doubt that this collection is what would to-day be called *Xerocomus parasiticus*, which is the only known parasitic boletus. Not only did Needham keep the complete sporophores but also the entire earth balls from which they were growing. The sporophores in structure and spores agree very well with fresh collections of this not very common species.

Needham's notes accompanying his specimens, state:

'Parasitic on *Scleroderma vulgare* (puffball). This I found some years ago but could not then determine it, I having torn them away from the host plant but since then I have found them in three places in Hardcastle Woods, namely Foulds Hill, near Walshaw Bridge, and the roadside above the Lodge, Aug. and Sept. 1904, 1905, 1906. The year 1907 has been a very unfortunate year for fungi of all kinds as very heavy frosts in July and August, and very cold nearly all summer; this year there was no *Boletus parasiticus* because there was no *Scleroderma vulgare* for them to grow on.'

James Needham, Hebden Bridge.

All the above localities have been revisited to see if further collections of this uncommon species could be taken. It has not been recorded in Needham's localities since the 'very heavy frosts in July and August (1907)' or apparently elsewhere in the Halifax parish.

In the dried material the cap varies between 2-5 cm. in diameter and is minutely cracked. The stem is slender, 1 cm. at the base, the thickest part tapering to about .75 cm. at the apex. The spores measure $10-16 \times 4-5\mu$ and are smooth and fusoid in shape and agree with fresh spore mounts. The measurements of the dried collection give a good illustration of the general size of the species. The host has been examined and it can be confirmed as *Scleroderma aurantiacum* Pers. recorded by Needham under the synonym *S. vulgare* Fr.

From examination of both this material and fresh collections it is confirmed that this species has trama of the *Phylloporus* type, and belongs to the genus *Xerocomus*.

DISCUSSION.—The occurrence of both *Boletus rostkovii* Fr. and *Boletus varicolor* B. et Br. in the Needham herbarium at first sight opened up possibilities of being able to clear up their taxonomic position, which has puzzled mycologists for a long time. With no drawings or notes on the fresh material, however, it was only possible to argue from microscopic details. Although occasionally it is necessary to re-describe species from a microscopic examination of the dried material only, this is a very poor and very unsound method, as the fresh characteristics are essential to the taxonomist in the determination of a species.

It is now felt that the Needham material does not give any firm conclusions which can help to define their status, as even the spore measurements disagree with accepted descriptions, therefore it is unwise to base any argument on the collections. In the light of the material, and other authors opinions, suggestions are, however, put forward and discussed.

7. *Boletus rostkovii* Fries. (Single collection.)

Crimsworth Dean, Hebden Bridge, Sept. 10th, 1910, det. as *B. rostkovii* Fr. This is a much discussed species often eliminated now from mycological floras as being doubtful due to inadequate knowledge. It appears Fries named it from Plate 18 in Part III of Sturm's *Deutschlands Flora*. It was named after the great pioneer mycologist Dr. F. W. Rostkovius. In Sturm's *Flora* it is cited as *B. lividus* Rost. which must not be confused with *B. lividus* Bull., this being quite different and now considered the only authentic species of the genus *Gyrodon*.

In 1931, E. J. Gilbert gives *B. rostkovii* as a synonym of *B. tumidus*, the latter being described in 1874 also by Fries. *B. tumidus* is also a little known species and is not recorded from the British Isles. Its position too is not clearly defined but it is attributed to the genus *Xerocomus*. Singer in considering the boleti of Florida writes thus: '*Boletus tumidus* Fr.—Fries' species is dubious as its author states himself. Gilbert bases his treatment on Peltureau emendation but this is also insufficient for generic determination.'

Massee in *British Fungus Flora* describes *B. rostkovii* and most of the Yorkshire records are attributed either to him or to C. Crossland. From their notes it appears that the continental conception of *B. tumidus* is fundamentally different from that of *B. rostkovii* which was held in Britain by Massee and followers. By the former *B. tumidus* is said to be glabrous and polished, but Massee states that in his conception, *B. rostkovii* is tomentose. Massee also states: 'On the ground under trees known at once by the short obconic stem and the flesh, becoming tinged red when broken.' Thus it appears from this that Massee was indeed familiar with a boletus which he attributed to Fries' *B. rostkovii*.

The label of Needham's single battered specimen acts as a local type:

First time for Parish of Halifax, Polyporaceae, *Boletus rostkovii* Fr. Crimsworth Dean, Hebden Bridge, Sept. 10th, 1910, James Needham and Willie Nowell. Testified C. Crossland.

Many specimens which could not be determined by Needham were taken to his friend Crossland to identify. Crossland and Massee were great companions compiling *Yorkshire Fungus Flora* together, and there is little doubt that Crossland and Massee would attribute different species to this one name.

Massee states the spores are biguttulate, $20 \times 5\mu$ in size. These are massive spores which are only met with in the genus *Leccinum*. Our specimen has spores which do not approach this size, but Massee's microscopic measurements are unreliable. The spores of Needham's material measure $(11)12-14 \times 4-5\mu$ and are 1-2 guttulate. It is unlikely that Crossland would have made such a great error in his measurements providing he examined the spores and did not as often, simply

identify his specimens from macroscopic characters. In shape the spores are typically subfusoid but the shape is not a critical factor, especially in the genus *Xerocomus* (*X. subtomentosus-chrysenteron* complex). The members, however, of the genus *Suillus* usually have comparatively small elliptical spores, and of the genus *Leccinum* have large subfusoid, sometimes hooked spores. The spores of Needham's specimens do not approach these shapes or sizes and this suggests that it is either a true *Boletus* (*Tubiporus* Paulet) or a *Xerocomus*.

Mme. Le Gal examined dried material of *Boletus dupanii* Boud. after Singer in *Farlowia* had pointed out that differences occur between the lateral rows of the mediostrate in the different segregate genera of the boleti. Mme. Le Gal was then able to transfer this species from the genus *Boletus* where it was thought to exist to the genus *Xerocomus*, because of the *Phylloporus* type trama.

The hymenium of Needham's material was examined and although badly damaged it was found to agree with characters found in the genus *Xerocomus*, the pores are also irregular and angular. It agrees very closely with dried material of *X. subtomentosus* and *X. chrysenteron* and may possibly only be a form of one of these. Without drawings it is impossible to clear this point up.

Massee states 'it is known at once by its short obconic stem and flesh becoming tinged red when cut.' The latter character obviously cannot be confirmed or disproved, but as this appears to be so distinctive it is doubtful whether Crossland would have suggested this name if this character had not been present. The stem on examination does not appear to have been obconic in character, and is certainly not pointed. The pileus cuticle is not cracked and the pores are not complex.

What *Boletus rostkovii* is remains unsolved but it can be seen that further observations are required not only on this species but also on *B. tumidus*. At the moment these names must rest until further material has been collected and they are either described afresh or rejected completely as *nomina dubia*.

8. *Boletus variegatus* B. et Br. (Single collection.)

Hawden Hole, Hebden Bridge, Sept. 1912, det. as above. *B. variegatus* is yet another name which mycologists know very little about and those that know the name do not know to what fungus it refers. It was first described by Berkley and Broome (*Notices of British Fungi*). Although only recorded from this country it has not been re-collected for many years.

The Needham material is very immature, yet the spores agree with those noted by Rea $10 \times 4\mu$ (Needham's material $10 \times 3-4\mu$) and are subfusoid in shape, possibly one guttulate. From descriptions available it appears that this species belongs to the genus *Boletus* in the restricted sense, probably of the *Calopodes* group.

The material at hand consists of two specimens, both in bad condition and both immature, in fact they could be anything. The tubes are free as stated by the authors, although they figure a specimen with broadly adnate tubes. Massee states: 'I examined the type and found the tubes to be similar in character to *B. subtomentosus*.' This cannot be confirmed when examining the present specimens. The spores in shape and size agree with many boleti and so are not critical.

The stem is described as clavate and reticulated at the apex, a characteristic met with in the true members of the genus *Boletus*. It is distinguished from *B. olivaceus* and its allies by a dark purple colour which develops under the cuticle (Cooke). There does not seem to be another member of the *Calopodes* which exhibits this character. Needham's material may or may not have showed this colour change; the stem does not appear to have been reticulate.

It can be noted here that *B. olivaceus* is no longer accepted as distinct from *B. calopus*, and is reduced to a synonym being simply a darker form. Imler records that *B. calopus* gives a very distinct violet colour when the tissues are tested with Melzer's sol. Because of the recorded closeness of *B. variegatus* to *B. calopus* (as *B. olivaceus*) the test was carried out, but there was no observed colour reaction.

It is suggested that further observations are required on this species with reference to fresh material, before anything can be fairly and finally recorded, since the Needham material is of little use owing to its being both immature and so badly damaged.

Thanks are due to P. D. Orton for his great help in reading notes and offering criticism, to J. T. Palmer for his suggestions and encouragement, and to the Director of the Herbarium, Kew Gardens, for allowing material and appropriate literature to be examined. Thanks are also due to the Hebden Bridge Literary and Scientific

Society, especially their President and Mr. Watson by whose kindness this material was made available for study.

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FIELD NOTE

Insects at Sycamore sap.—A brief examination of the insects attracted to slight exudations of sap on the trunks of sapling sycamores was made during a mycological excursion to Bramham Woods on April 13th, 1958. The commonest insect proved to be the hover-fly *Melangyna quadrimaculata* (Verrall), an interesting early species with which I have long been familiar in the Leeds district. It is usually to be found on willow blossom in March and April, and is over by the time the normal hover-fly season commences. Both sexes were plentiful on the sap, in about equal numbers. The Muscid *Dasyphora cyanella* (Mg.) and the Calliphorid *Pollenia rudis* (F) were also in some numbers and other flies included *Leria serrata* (L.) (Helomyzidae), *Thaumatomyia notata* (Mg.) (Chloropidae), and a Drosophilid, the last eluding capture. The predaceous bug *Anthocoris nemorum* (L.) was quite plentiful. The only coleopteron noted was the Ambrosia beetle *Trypodendron domesticum* (L.), of which a score of individuals of both sexes were feeding on the sap or walking over it.

—W. D. HINCKS.

STOCKSMOOR

YORKSHIRE naturalists will be glad to know that Stocksmoor has been saved from 'development'. During the recent sale of the Allendale estate, the moor was purchased by a business firm largely for preservation as a public amenity and without intent to build or alter the character of the locality. The moor is well known to naturalists in the Dewsbury, Huddersfield and Wakefield districts as one of the most interesting areas in the region to botanists, ornithologists and entomologists. The moor supports a good insect and avi-fauna, badgers breed close by and the red squirrel is no rarity in the wooded parts, while botanically it yields several plants unknown elsewhere in the district. At a time when so many areas of natural history interest are being destroyed it is very gratifying to hear of such a move being made independently of Conservation authorities, and all naturalists will applaud the public-spirited action of those responsible for the preservation of the moor.

YORKSHIRE NATURALISTS' UNION EXCURSIONS IN 1958

SETTLE, Whitsun, May 23rd-25th

In spite of changeable weather during the first two days, this was an enjoyable and well-attended meeting. On Saturday morning the main party explored the scars and woods west of Settle. In the afternoon, in an effort to add more plants to the B.S.B.I. plant list, the botanical party went by car on to lower ground to the south of the Craven fault. Sunday was spent, in the company of our immediate past-President, Mr. P. H. Holmes, at Colt Park Wood and neighbourhood. In the evening Mr. and Mrs. Holmes very kindly invited us to Malham Tarn House, where we were able to examine many interesting exhibits illustrating the work of the Field Study Centre, which had been arranged in the laboratories in preparation for an Open Day on Whit Monday. By now the weather had improved and Malham and the surrounding country looked really magnificent in the brilliant evening sunlight.

Monday was spent on the limestone at Catrigg Force and Stainforth. Tea was followed by the usual meeting to receive Sectional reports, held under the chairmanship of our President, Mr. A. Hazelwood, when 17 affiliated Societies responded to the roll call. Thirty-two new members were elected, the first results of the membership drive inaugurated by our President earlier this year.

Ornithology (R. Chislett): Exploration was mainly confined to Cocket, Lawkland and Austwick Mosses, often approached over wet walls which the ladies negotiated nobly; and to wooded gills. The higher moors were approached no nearer than Colt Park Wood.

Nests were found of Lapwing, Curlew, Wood-pigeon, Dipper, Wren, Song-Thrush, Blackbird, Willow-Warbler, Meadow-Pipit, Chaffinch and Lesser Redpoll; to which I added Oystercatcher and Wheatear on my way back on the 27th.

Black-headed Gulls (*ca.* 500) were scattered over Cocket Moss without a visible sign of a nest. Possibly they had newly arrived. A flock of about 50 Curlews on Austwick Moss also aroused conjecture.

Yellow Wagtails were paired in pastures by the Ribble, and on the high ground above Settle, and were generally numerous, as were Wheatears on the high ground. Redshank and Snipe were on all the mosses; Redpolls and Sedge-Warblers were on Lawkland and Austwick Mosses only, where also a solitary Short-eared Owl occurred.

Warblers, Redstarts, Tree-Pipets, Flycatchers, Tits and the Cuckoo were very scarce, excepting for Willow-Warblers, Whitethroats and Sedge-Warblers. A Green Woodpecker was heard and a boring of the Great Spotted was seen. The total of 52 species also included Mallard, Kestrel, Sandpiper, Lesser Black-backed Gull, Swift, Skylark (numerous), the Hirundines, Greenfinch, Reed-Bunting and Yellow-Hammer.

Entomology (J. H. Flint): Rain and a cold wind inhibited collecting at Colt Park Wood and my activities were restricted to the ground beetles. The grykes themselves yielded nothing, but a few species of Carabidae and Staphylinidae were found under stones at the south end of the wood and included *Patrobus atrorufus* Str., which is typical of these upland limestones and *Quedius subfuliginosus* Britt. Two specimens of the common sawfly *Dolerus aeneus* Hart. were taken; no others were seen, but sweeping for them was impossible.

Sweeping in the evening at Settle produced a number of common beetles, *Phyllobius viridicollis* F. and *Derocrepis rufipes* L. being numerous, but nothing noteworthy was seen.

Conchology (E. M. Morehouse): In Cave Hole Wood *Clausilia cravenensis* Taylor and *Carychium minimum* Müll. were abundant. *Helicella itala* L. was plentiful on the hills and the top of Cave Hole Wood.

The following were taken in Cave Hole Wood (1), Colt Park (2), and Catrigg Force and area (3):

Agriolimax agrestis L., 1, 2, 3.
A. agrestis v. *albida* Picard, 1.
Arion ater L., 1, 2.
A. ater v. *atterima*, 1.
A. ater, v. *plumbea* Roebuck, 3.

Vitrina pellucida Müll., 1.
Vitrea cellaria Müll., 1.
V. alliaria Müll., 1.
V. pura Alder., 1.
Helicella itala L., 1.

Clausilia laminata Montagu, 1, 2.
C. cravenensis Taylor, 1.
C. bidentata Ström., 1, 2.
Carychium minimum Müll., 1.
Jamanea cylindracea Da Costa, 1.
Pyramidula rotundata Müll., 1.
P. rupestris Drap., 1, 3.

Euconulus fulvus Müll., 1.
Helix nemoralis L., 1, 3.
H. hortensis Müll., 1, 3.
Arianta arbustorum L., 1, 2, 3.
Hygromia rufescens Penn., 1, 2, 3.
H. histida L., 2.

Flowering Plants (W. A. Sledge): The routes chosen during the week-end covered three grid squares. Additions to existing records for the B.S.B.I. mapping scheme numbered between 60-70, of which 45 came from the square in which Austwick is situated. Having regard to the early date of the meeting and the backwardness of the season this must be regarded as a satisfactory result, though much clearly remains to be done before complete coverage is achieved.

Cave Hole Wood was visited during the first part of Saturday's excursion and amongst the more interesting plants seen here was an abundance of *Potentilla Tabernaemontani* Aschers. (Spring Cinquefoil) in full flower on the lip of the scar overlooking the wood. A few plants of *Hippocrepis comosa* L. (Horseshoe Vetch) were also seen on the scar edge and ledges. The wood itself being south-facing and open in some parts but more heavily shaded in others, has a varied ground flora. Spindle tree and buckthorn (*Rhamnus catharticus* L.) are present in addition to rose, hawthorn and hazel. Species characteristic of ash-hazel woodland on carboniferous limestone included lily-of-the-valley and herb paris, the latter so thick on the ground in one part as practically to exclude other ground species. *Geranium sanguineum* L. (Bloody Cranesbill) and *Lithospermum officinale* L. (Gromwell) were also seen and the rarer plants present include *Cardamine impatiens* L. (Narrow-leaved Bittercress), *Polygonatum odoratum* (Mill) Druce (Solomon's Seal) and *Dryopteris villarsii* (Bell.) Woyнар (Rigid Buckler-fern).

After lunch the botanical party moved on to Orcaber Lane near Austwick. This lane is notable for the number of different willows growing in the hedges. In addition to most of the common species, *Salix pentandra* L. (Bay Willow) and *S. nigricans* Sm. (Dark-leaved Willow) are both present. Columbine—with maroon-purple flowers—and mountain currant (*Ribes alpinum* L.) have long been known here but were probably introduced or bird-sown from gardens originally. Other species noted here were *Genista tinctoria* L. (Dyer's Greenweed) and *Scirpus sylvaticus* L. (Wood Club-rush).

The flora of Colt Park Wood is too well recorded already to yield anything new. Most of the species for which this locality is notable were seen including *Gagea lutea* (L.) Ker-Gawl, (Yellow Star-of-Bethlehem) which here grows in its most elevated station in the country. Other species seen here included:

Trollius europaeus L. (Globe Flower)
Actaea spicata L. (Herb Christopher)
Viola lepida Jord. (Wild. Pansy).
Geranium sylvaticum L. (Wood Cranesbill).
Prunus Padus L. (Bird Cherry).
Rubus saxatilis L. (Stone Bramble).
Potentilla Crantzii (Crantz) Beck (Alpine Cinquefoil).
Saxifraga hypnoides L. (Mossy Saxifrage).

Cirsium heterophyllum (L.) Hill (Melancholy Thistle).
Crepis paludosa (L.) Moench (Marsh Hawk's-beard).
C. mollis (Jacq.) Aschers. (Soft Hawk's-beard).
Polygonatum odoratum (Mill.) Druce (Solomon's Seal).
Allium oleraceum L. (Field Garlic).
Paris quadrifolia L. (Herb Paris).

At 'Salt Lake', Ribblehead *Salix phylicifolia* L. (Tea-leaved Willow) and *Dryopteris villarsii* (Bell.) Woyнар (Rigid Buckler Fern) were seen.

Catrigg Force and the wooded gill below did not produce any species other than those commonly occurring throughout the Craven limestones. *Viola lutea* Huds. (Mountain Pansy) was in good flower in the pastures leading to the gill and several specimens of the primrose-cowslip hybrid were seen in the gill itself but no other species deserving special mention were observed. The return walk to Settle *via* Stainforth Bridge and thence down the river was also rather unproductive.

Bryology (G. A. Shaw): It was the general opinion among the bryologists that Colt Park had nothing of very great rarity, but that the common species which did

occur there were in a very luxuriant condition. Rarely have we seen such masses of *Neckera*, *Thuidium* and *Thamnium* as clothed the sides of the deep crevices. The *Thamnium* was fruiting abundantly here. The following list of bryophytes seen at Colt Park has been compiled from the combined results of Miss L. I. Scott, Mr. F. E. Branson and your Recorder. All are from Colt Park wood unless otherwise indicated:

Polytrichum formosum Hedw.
Fissidens cristatus Wils.
F. adianthoides Hedw., *c. fr.* (Salt Lake).
Ditrichum flexicaule (Schleich.) Hampe
Dicranoweissia cirrata (Hedw.) Lindb.,
c. fr.
Dicranum scoparium Hedw.
Encalypta streptocarpa Hedw.
Tortula ruralis (Hedw.) Crome
T. intermedia (Brid.) Berk.
T. subulata Hedw.
Cinclidotus fontinaloides (Hedw.) P.
 Beauv. (stream nr. Colt Park).
Barbula recurvirostris (Hedw.) Dix.
Gymnostomum aeruginosum Sm.
Tortella tortuosa (Hedw.) Limpr.
Grimmia apocarpa Hedw.
Rhacomitrium lanuginosum (Hedw.) Brid.
 (Salt Lake).
Bryum pseudotriquetrum (Hedw.)
 Schwaegr. (Salt Lake).
B. capillare Hedw.
Mnium hornum Hedw.
M. cuspidatum Hedw., *c. fr.*
M. affine Bland. (Salt Lake).
M. undulatum Hedw.
Philonotis fontana (Hedw.) Brid. (Salt
 Lake).
Orthotrichum cupulatum Brid.
Climacium dendroides (Hedw.) Web. &
 Mohr
Neckera crispa Hedw.
N. complanata (Hedw.) Hübén.
Thamnium alopecurum (Hedw.) B. & S.,
c. fr.

Anomodon viticulosus (Hedw.) Hook. &
 Tayl.
Thuidium tamariscinum (Hedw.) B. & S.
Cratoneuron filicinum (Hedw.) Roth
 Salt Lake).
C. commutatum (Hedw.) Roth (Salt
 Lake).
Acrocladium cuspidatum (Hedw.) Lindb.
Isoetecium myurum (Brid.) Brid.
Camptothecium sericeum (Hedw.) Kindb.
Cirriphyllum crassinervium (Tayl.)
 Loeske & Fleisch.
Eurhynchium riparioides (Hedw.) Jen-
 nings (stream nr. Colt Park).
Pseudoscleropodium purum (Hedw.)
 Fleisch. (Salt Lake).
Pleurozium schreberi (Brid.) Mitt. (Salt
 Lake).
Isopterygium elegans (Hook.) Lindb.,
c. fr., (Salt Lake).
Hypnum cupressiforme Hedw.
Ctenidium molluscum (Hedw.) Mitt.
Rhytidadelphus triquetrus (Hedw.)
 Warnst.
R. squarrosus (Hedw.) Warnst.
R. loreus (Hedw.) Warnst.
Hylocomium splendens (Hedw.) B. & S.
 (Salt Lake).
Orthocaulis floerkii (Web. & Mohr) Buch.
Plagiochila asplenioides (L.) Dum.
Scapania aspera Bernet
Porella platyphylla (L.) Lindb.
Frullania tamarisci (L.) Dum.
Preissia quadrata (Scop.) Nees.

Cowside Beck, between Catrigg Force and Stainforth, yielded many of the bryophytes already noted at Colt Park. A most interesting part of this gill was a very wet deposit of tufa, which produced *Euccladium verticillatum* fruiting abundantly, and *Riccardia sinuata*. The two species of *Metzgeria* recorded were very abundant and in fine condition. Your Recorder is responsible for the following list for Cowside Beck:

Fissidens cristatus Wils.
Seligeria pusilla (Hedw.) B. & S., *c. fr.*
Dicranum majus Turn.
Encalypta vulgaris Hedw., *c. fr.*
Gymnostomum recurvirostrum Hedw.
Euccladium verticillatum (With.) B. & S.
c. fr.
Trichostomum brachydontium Bruch var.
cophocarpum (Schp.) Richards &
 Wallace.
Bryum pallens (Brid.) Röhl
Plagiopus oederi (Brid.) Limpr., *c. fr.*
Breutelia chrysocoma (Dicks.) Lindb.

Neckera crispa Hedw.
N. complanata (Hedw.) Hübén.
Anomodon viticulosus (Hedw.) Hook. &
 Tayl.
Cratoneuron commutatum (Hedw.) Roth.
Tritomania (*Lophozia*) *quinquedentata*
 (Huds.) Buch (det. H. Walsh).
Metzgeria furcata (L.) Dum.
M. pubescens (Schränk) Raddi
Riccardia sinuata (Dicks.) Trev. (det.
 E. C. Wallace).
Preissia quadrata (Scop.) Nees
Conocephalum conicum (L.) Dum.

HAWNBY, V.C. 62, June 7th

After a wet and dreary morning the weather improved, but heavy mist never allowed the party to have a real look at some of the most attractive parts of the Rye Valley. About 35 people were present at the meeting and everyone seemed very satisfied with the day's excursion. Mr. Hartley, the head keeper for the Murton Estate accompanied the party for much of the time and his specialised knowledge was a great asset.

Ornithology (R. Chislett): The going was heavy, with wet herbage after recent rain, and the small party did not explore the area thoroughly. On the wooded slopes near Murton, colonised Rooks, Green Woodpecker, Turtle Dove, Redstart, White-throats and Willow-Warblers, Blackcaps, but not Garden Warblers, Goldcrest, Spotted Flycatcher, Tree-pipit and Marsh-tit occurred. Skylarks, Meadow-pipits and Whinchat were on the open ground. Dipper and Pied Wagtail were by the beck. Sparrow-hawk and Kestrel were noted. Wading birds were very scarce. Finches included the Goldfinch. In all, 38 species were identified, including the usual hirundines, game-birds and common species.

Flowering Plants (M. E. Bradshaw and D. H. Valentine): The botanists entered Yowlass Gill by the farm road from Murton Grange and turned towards the north-west along the hill side. Most of the south-west facing slope is open deciduous woodland containing very fine trees of the common maple (*Acer campestre* L.) which were in full flower, as well as sycamore, ash, elm and the birches, *Betula pubescens* Ehrh. and *B. verrucosa* Ehrh., with hazel and hawthorn as the main shrubs.

Among the ground flora typical of such a woodland were *Ranunculus auricomus* L. (Goldilocks), *Myosotis sylvatica* Ehrh. (Wood Forget-me-not), *Hypericum hirsutum* L. (Hairy St. John's Wort), *Circaea lutetiana* L. (Enchanter's Nightshade), *Asperula odorata* L. (Woodruff), *Campanula latifolia* L. (Giant Bellflower), *Melica uniflora* Retz. (Wood Melick). Towards the end of the wood was a fine stand of *Aquilegia vulgaris* L. (Columbine), just coming into flower and flowering plants of *Convallaria majalis* L. (Lily-of-the-valley). Beyond this *Crataegus monogyna* Jacq. (Hawthorn) and *Sambucus nigra* L. (Elder) replaced the trees. The well grown herb-layer contained *Campanula latifolia* L. and three species of Lady's Mantle, *Alchemilla glabra* Neyg., *A. xanthochlora* Rothm., and *A. vestita* (Bus.) Raunk.

The vegetation on the top of the ridge indicated leached conditions by the presence of much *Galium saxatile* L. (Heath bedstraw) and *Potentilla erecta* (L.) Rausch (Tormentil) in *Deschampsia caespitosa* (L.) Beauv. (Tufted hair-grass), *Holcus lanatus* L. (Yorkshire fog), *Festuca ovina* L. (Sheep's fescue) and *Anthoxanthum odoratum* (Sweet Vernal grass).

After lunch the thin soil over the limestone outcrops south of the ridge were searched. These were rich in species, and included dwarf *Companula glomerata* L. (Clustered bellflower), *Origanum vulgare* L. (Marjoram), *Aphanes arvensis* L. s.s.t. (det M. E. B.) (Parsley piert), *Viola hirta* L. (Hairy violet), *Arabis hirsuta* (L.) Scop. (Hairy Rock-cress), *Hypericum hirsutum* L., and *Sherardia arvensis* L. (Field madder) in a natural habitat; also *Koeleria gracilis* Pers. (Crested hair-grass), *Trisetum flavescens* (L.) Beauv. (Yellow oat), *Helictotrichon pratense* (L.) Pilger (Meadow Oat) and *Brachypodium sylvaticum* (Huds.) Beauv. (Slender false brome). Of particular interest were the thriving plants of *Ajuga reptans* L. (Bugle), one patch with white flowers, on thin well-drained soil—so different from its usually wet and often shaded habitats—and *Euonymus europaeus* L. (Spindle-tree) some of which was dwarfed (probably grazed) and looked deceptively like bilberry. *Filipendula vulgaris* Moench. (Dropwort) and *Atropa belladonna* L. (Deadly nightshade) were found near here.

Near the head of Sledhill Gill, many calcareous springs form a base-rich flush colonised by *Schoenus nigricans* L. (Bog-rush), *Carex panicea* L. (Carnation sedge), *C. dioica* L., *C. lepidocarpa* Tausch, *C. hirta* L., *C. nigra* (L.) Reichard (Common sedge), *Eriophorum angustifolium* Honck. (Common Cotton-grass) more often seen on acid peat; *Valeriana dioica* L. (Marsh Valerian), *Pinguicula vulgaris* L. (Butterwort), *Chrysosplenium oppositifolium* L. (Opposite-leaved Golden Saxifrage), *Tussilago farfara* L. (Coltsfoot), a typical natural habitat for this plant; *Menyanthes trifoliata* L. (Buckbean) previously unrecorded for the valley. Most of these plants were also seen lower down the valley by the stream and the small flushes. Also

seen were *Eriophorum latifolium* Hoppe. (Broad leaved Cotton-grass), *Triglochin palustris* L. (Marsh Arrow-grass), *Carex hostiana* DC. (Tawny sedge), *Orchis mascula* L. (Early purple orchid) and *Listera ovata* (L.) R. Br. (Twayblade).

Lower down the valley in the wood again, a few more species were seen: *Lithospermum officinale* L. (Gromwell), *Paris quadrifolia* (Herb Paris) and *Ophrys insectifera* L. (Fly orchid). Only a few ferns were seen, *Pteridium* (L.) Kuhn. (Bracken), *Dryopteris filix-mas* (L.) Schott. (Male fern), *Athyrium filix-femina* (L.) Roth. (Lady fern), *Cystopteris fragilis* (L.) Bernh. (Brittle bladder-fern) and *Blechnum spicant* (L.) Roth. (Hard-fern) with *Vaccinium myrtillus* L. (Bilberry).

It was an interesting day for the botanists, and eight more species were added to the 490 recorded for the 10 Km. square.

Fungi (W. G. Bramley): Some thirty-five species of fungi were identified, including four species of agarics, the largest of these being the St. George's Mushroom, *Tricholoma gambosum* Fr. Rusts and smuts were sparsely represented and owing to the absence of much dead wood pyrenomycetes were also little in evidence. A *Leptosphaeria* on *Angelica* was, however, frequent, but its identity is still uncertain. In common with my own area several common *Dasyscypha* species were either not collected or only in small quantity. The more notable species seen were:

* Not in Mason & Grainger's *Catalogue of Yorkshire Fungi* for V.C. 62.

† Not in Mason & Grainger's *Catalogue of Yorkshire Fungi*.

† *Microspodia pteridina* (Karst.) Boud., on *Pteridium*.

† *Leptosphaeria nigrans* (Desm.) Ces. & de Not., on *Bromus*.

Lophodermium arundinaceum (Schröd.) Chev., on *Deschampsia*.

† *Ophiobolus herpotrichus* (Fr.) Sacc., on *Bromus*.

* *Periconia byssoides* Pers. ex Corda, on *Chamaenerion*.

Entomology (F. Hewson): Since Lepidoptera were so few I took samples of all orders I saw, and am grateful for the identification of various species by Messrs. J. H. Flint and H. N. Michaelis.

EPHEMEROPTERA.—*Ephemera danica* Mull. A swarm of about twenty seen.

COLEOPTERA.—*Sinodendron cylindricum* L. One.

HYMENOPTERA.—*Dolerus gonager* F. A common, well-distributed sawfly.

DIPTERA.—A number of specimens are awaiting identification.

LEPIDOPTERA.—*Epirrhone alternata* Mull. (Common Carpet.) Four.

Xanthorhoe spadiceana Sch. (Red Twin-Spot Carpet.) One.

Plutella maculipennis Curt. (Diamond Backed.) Six.

Hemimene sp. One.

Mr. W. G. Bramley had seen a butterfly which he thought was probably *Hamearis lucina* L. (Duke of Burgundy Fritillary), and another member confirmed that the species does occur hereabouts.

When approaching Hawnby I had spent about fifteen minutes on the heather at the top of Sutton Bank, finding seven larvae of *Lasiocampa quercus* L. f. *callunae* Palmer (Northern Eggar), all typical.

Conchology (E. M. Morehouse): As much rain had fallen during the night slugs were everywhere, especially *Agriolimax agrestis* and the type *Arion ater*. *Limax gagates* Drap. was found by the garden wall of the hotel. The following species were observed:

Arion ater L.

A. ater L. v. *plumbea* Roebuck

Limax maximus L.

Agriolimax agrestis L.

A. agrestis L. v. *reticulata* Moq. Tan.

Limax gagates Drap.

Vitrea cellaria Müll.

V. alliaria Müll.

V. pura Alder.

V. nitidula Drap.

Clausilia bidentata Ström.

C. laminata Montagu

Ena obscura Müll.

Cochlicopa lubrica Müll.

Helix nemoralis L.

H. hortensis Müll.

H. aspersa Müll.

Arianta arbustorum L.

Pyramidula rotundata Müll.

Succinea putris L.

Helicella caperata Montagu

ROCHE ABBEY, V.C. 63, June 21st

Some 40 people attended this excursion despite the wet day. Thirteen affiliated Societies were represented at the meeting.

Ornithology (R. Chislett): In and around King's Wood 48 species were identified. Rain fell at intervals even under the old Yews where sometimes we sheltered, and undergrowth was consequently very wet. Young Nuthatches that had recently left the nest-hole were watched as they clung to and flew between trees. Warblers were mainly quiet and neither Garden-Warbler nor Wood-Warbler was heard, but Sedge-Warbler, Chiffchaffs, Blackcaps and Whitethroats sang. Goldcrest, Tree-creeper and Spotted Flycatchers were noted, two species of Pipit and three of Wagtail. Finches included Linnet, Goldfinch and Tree-Sparrow. A brood of young Jays had left the nest very recently. Turtle Dove and Great Spotted Woodpecker occurred. Woodcock was the only wader, and Mallard and Tufted Duck the only ducks. House-Martins were much fewer than Swallows or Swifts. A Keeper's 'gibbet' included Tawny Owls concerning which a local society had already protested.

Flowering Plants (Mrs Duncan): Fourteen of the species listed on the circular were noted including *Helleborus viridis* L. (Green Hellebore), *Astragalus glycyphyllos* L. (Wild Liquorice) *Campanula latifolia* L. (Giant Bellflower), *Viola hirta* L. (Hairy Violet), *Ribes alpinum* L. (Mountain Currant) and *Parietaria diffusa* Mert. & Koch. (Pellitory-of-the-wall). In all 194 species were recorded.

The area worked was around the Abbey ruins, and the adjacent fields and woodland. A small disused quarry provided *Erigeron acris* L. (Blue Fleabane) and *Catapodium rigidum* (L.) Hubbard (Hard Poa). *Geranium phaeum* L. (Dusky Cranesbill), *Doronicum pardalianches* L. (Leopard's Bane) *Cerastium tomentosum* Hegi (Snow-in-summer) and *Polystichum setiferum* (Forsk.) Woytnar (Soft Shield-fern) occurred near the Abbey in what appeared to be the site of an old garden. Mr. Newton pointed out a station for *Gagea lutea* (L.) Ker-Gawler (Yellow Star-of-Bethlehem) in the Abbey grounds but no sign of the plant was visible at this late date. *Ophrys apifera* L. (Bee Orchid) was found by Mr. R. Collins by the path from Maltby to Roche.

Other species noted included *Clematis vitalba* L. (Traveller's-joy), *Poa compressa* L., *Bryonia dioica* L. (White Bryony), *Bromus erectus* Huds. (Upright Brome), and the sedges *Carex remota* L. and *C. distans* L., the latter in a hillside flush on the limestone between Maltby and Roche Abbey.

Fungi (R. Watling): The persistent drizzle and showers and the rain on the days prior to the meeting was continuous enough to soak the herbage and the ground beneath. Only a small area was examined, that on either side of the path from the meeting-place at the Abbey gates to the end of the woodland to the north of the river at King's Wood.

About thirty agarics were collected, the most interesting being *Agaricus edulis* V.H., not previously recorded for Yorkshire, and *Inocybe patouillardi* Bres., not previously recorded for V.C. 63. Both these species turn red when bruised, and a trio of 'rouge' agarics was made by the collection of *Mycena acicula* Schaeff. The latter is very small, only up to 5 mm. in diameter across the cap, and of a subtle orange-red colour with a yellow stem. Masses of *Boletus vitellinus* Pers. were collected amongst the grass. *Pleurotus cornucopiae* (Paul.) Pers. made a fine show on elm trunks as did a beautiful specimen of *Polyporus sulphureus* (Bull.) Fr. on yew. *Crucibulum vulgare* Tul. (Bird's Nest Fungus) was collected on various substrata, especially elder, along with *Corticium sambuci* (Pers.) Fr. The micro fungi were the usual species which would be expected of such an area. *Ophiobolus rubellus* and *Xylaria carpophila* (Pers.) Fr. however were two interesting pyrenomycetes found. *Helotium herbarum* (Pers.) Fr. was taken on old umbellifer stems.

KIRKHAM ABBEY, V.C. 61, July 5th—6th

Ornithology (R. Chislett): In the Kirkham area, south of the Derwent, 45 species were identified, including Heron, Coot, Woodcock, Stock and Turtle Doves,

Green Woodpecker, Jay, Grasshopper-Warbler, Sedge-Warbler, Blackcap (plentiful), Garden-Warbler (scarce), Chiffchaff, Pied Wagtail, Bullfinch and Reed Bunting.

A Woodpecker drumming was thought to be the Greater Spotted but was not seen. The Redstart was scarce, but most of the commonest species were plentiful. Of the birds listed during the Y.N.U. visit of July 1920, Sparrow-Hawk, Dipper and Kingfisher were not seen. A visit to Birdsall under the guidance of the Hon. M. Willoughby added Dabchick, Curlew, Hawfinch and Marsh-tit to the list. A Lesser-spotted Woodpecker's hole used this year was shown to us bringing the total to 50.

Entomology.—LEPIDOPTERA (F. Hewson): Mrs. J. Payne noted that *Polyommatus icarus* Rott. (Common Blue) and *Coenonympha pamphilus* L. (Small Heath) butterflies were common. Mr. D. F. Walker saw one *Augiades veneta* Br. & Grey (Large Skipper) in boggy ground at Howsham. Mr. D. H. Smith found a small colony of *Lomasipilis marginata* L. (Clouded Border) in Howsham Woods, where he also noted two micros, *Eucosma pflugiana* Fab. and *E. aspidiscana* Hueb. From Leavening Quarry he reported *Stenoptilia pterodactyla* L., *Ermarmonia aurana* Fab. and *Micropterix* sp. (? *aruncella* Scop. or *calthella* L.). Of larvae Mrs. Payne showed me some of *Cucullia verbasci* L. (Mullein Shark) and Mrs. J. H. Flint brought one of *Cosmia trapezina* L. (Dunbar).

Other Orders (Mrs. Flint and D. H. Smith): It was hoped that this locality would be very productive, but unfavourable weather conditions hindered collecting. Nevertheless, some interesting insects were taken. Mrs. Flint writes:

On Saturday morning wet vegetation prevented sweeping, and fine rain kept insects down in the marsh at Kirkham Abbey, few beetles other than common species being seen. Several specimens of *Plateumaris sericea* L. were taken, and large numbers of *Eusphalerum minutum* F. were present on the flowering heads of *Scirpus sylvaticus*. The cardinal beetle, *Pyrrochroa serraticornis* Scop., the soldier beetles *Cantharis cryptica* Ashe and *Malthodes dispar* Germ. were taken from vegetation on the riverside path as drying conditions brought up insects. After lunch, the bug *Heterocordylus leptocerus* Kirsch. was found on broom in flower in the plantation, and on sandy ground above the plantation, specimens of *Amara fulva* Deg. and *Bembidion rupestre* L. were taken, the latter new to the vice-county. *Aphalara calthae* L. (Hem., Chermidae), also new to the vice-county, abounded on *Rumex acetosella*.

On Sunday, rain again spoiled collecting, but hot sunshine in the afternoon brought up numbers of *Dascillus cervinus* L. in the chalk pit at Leavening. *Cateretes rufilabris* Lat. and *Brachypterus glaber* Steph. were among beetles taken in a marsh at Burythorpe.

Mr. D. H. Smith, similarly hampered by the weather, reported large numbers of the fly *Empis tessellata* F. from Horsham, while *Volucella bombylans* (L.) was common by the river. The beetles seen were common ones, and the Diptera taken included *Zelima sylvarum* (L.), *Chilomyia illustrata* (Harris), *Cheilosia rosarum* (F.), *Chrysotoxum bicinctum* (L.), *Herina frondescentiae* (L.) and *Syrphus lucorum* (L.) from Howsham, and *Chrysophilus cristatus* (F.), *Isopogon brevirostris* (Mg.) and *Urophora jaceana* (Herr.) from Leavening quarry.

Arachnida (T. A. Geyer): Of the three habitats visited, viz. Howsham Wood (HW), a chalk (C) and sand pit (S), the first yielded the most species. With large tracts of undergrowth rendered uninhabitable by the heavy and persistent rain of the few days preceding the meeting, beating and sweeping gave disappointing results. Reliance, therefore, had to be placed on the slow method of 'grubbing'. Intensive searching revealed members of diverse families occurring together in pockets of less sodden litter. The three species of Clubionidae found are typical of woodland. Representatives of the other families met with are to be found in a variety of habitats. With the exception of *Lepthyphantes alacris* (Blackwall), which is a rare but typically northern species, all are frequent and generally distributed.

In the other two habitats, Lycosids or 'wolf' spiders were conspicuous. By far the most abundant were *Lycosa amentata* (Clerk) and *L. pullata* (Clerk). *L. tarsalis* (Thorell) was to be seen on the sand, while *L. hortensis* (Thorell) seemed confined

to the chalk. This latter species is said to be a typically southern species (Locket & Millidge, *British Spiders*, 1951), and is somewhat local.

It is possible that the Linyphiid mentioned above is new to Yorkshire (or, at least, to V.C. 61). I hope to confirm this when my list of Yorkshire Spiders is completed. (Incidentally, I should be most grateful for any records or lists of Yorkshire Arachnida which have been published in any journal other than *The Naturalist*. Address: 84 Wolfreton Lane, Willerby, (Hull), E. Yorks.)

LIST OF SPECIMENS FOUND

CLUBIONIDAE:

<i>Clubiona stagnatalis</i> (Kulcz.) ♀	HW
<i>C. lutescens</i> (Westring) ♀	HW
<i>C. reclusa</i> (O.P. Cam.) ♂	HW

THOMISIDAE:

<i>Xysticus cristatus</i> (Clerk) ♀	HW
<i>X. lanio</i> (C. L. Koch) ♂	S

LYCOSIDAE:

<i>L. pullata</i> (Clerk) ♂♀	SC
<i>L. amentata</i> (Clerk) ♂♀	SC
<i>L. tarsalis</i> (Thorell) ♀	S
<i>L. hortensis</i> (Thorell) ♀♂	C
<i>Trochosa terricola</i> (Thorell) ♀	C

THERIDIIDAE:

<i>Theridion ovatum</i> (Clerk) ♀	HW
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TETRAGNATHIDAE:

<i>Pathygnatha clerki</i> (Sund) ♀	HW
<i>P. degeeri</i> (Sund) ♀	HW

LINYPHIIDAE:

<i>Dicymbium nigrum</i> (Blackwall) ♀	HW
<i>Bathypantes dorsalis</i> (Wider) ♀♂	HW
<i>Lepthyphantes alacris</i> (Blackwall) ♀	HW
<i>Linyphia montana</i> (Clerk) ♀	HW
<i>L. clathrata</i> (Sund) ♀	HW

Flowering Plants (Miss E. Crackles and W. A. Sledge): On Saturday the main party worked the area bordering the river to the north of Kirkham Abbey as far as Firby Wood while Mr. Sayer and W. A. S. went south through Howsham Wood. A preliminary examination of the Abbey walls was first made but *Minuartia tenuifolia* (L.) Hiern (Fine-leaved Sandwort) could not be found though *Poa compressa* L. (Flattened Poa) was seen there. Other plants seen on the ruins included *Asplenium trichomanes* L. (Maidenhair Spleenwort), *A. ruta muraria* L. (Wall-rue), *Parietaria diffusa* Mert. & Koch (Pellitory-of-the-Wall) and *Kentranthus ruber* (L.) DC. (Red Valerian). On dry banks by the road above Kirkham Abbey *Geranium pyrenaicum* Burm. f. (Mountain Cranesbill), which was first collected here by W. Middleton in 1810, is still plentiful and *Carex divulsa* Stokes grows here in one of its few Yorkshire stations.

Howsham Wood was clear-felled during the war and, save at the south end, only a fringe of alder-willow woodland remains bordering the river, the slopes above being a wilderness of bracken and bramble. The river banks and adjacent ground however proved interesting. A marshy field leading down to the river at the north end of the wood yielded *Chrysosplenium oppositifolium* L. (Opposite-leaved Golden Saxifrage) and *Crepis paludosa* (L.) Moench (Marsh Hawk's beard)—the latter also seen to the north of Kirkham in the Crambeck area and both uncommon species in the East Riding—and *Carex lepidocarpa* Tausch. The following species were noted during the walk southwards along the river bank: *Rorippa sylvestris* (L.) Bess. (Creeping Yellow-cress), *R. amphibia* (L.) Bess. (Great Yellow-cress), *Hesperis matronalis* L. (Dame's Violet), *Erysimum cheiranthoides* L. (Treacle Mustard), *Stellaria nemorum* L. (Wood Stitchwort), *Ribes nigrum* L. (Black Currant), *Callitriche obtusangula* Hegelm. (Water Starwort), *Scrophularia aquatica* L. (Water Figwort), *Veronica anagallis-aquatica* L. (Water Speedwell), *V. scutellata* L. (Marsh Speedwell), *Tanacetum vulgare* L. (Tansy) and *Carex acutiformis* Ehrh.

The main party working north from Kirkham Abbey saw *Scirpus sylvaticus* L. (Wood Club rush) in marshy ground by the river, its only known East Riding

station. Other species noted here were *Stellaria alsine* Grimm. (Bog Stitchwort), *Triglochin palustris* L. (Marsh Arrow-grass), *Juncus subnodulosus* Schrank (Blunt-flowered Rush), *Orchis Fuchsii* Druce (Spotted Orchis) and the sedges *Carex acutiformis* Ehrh., *C. disticha* Huds., *C. nigra* (L.) Reich. and *C. ovalis* Good. Along woodland rides just to the north of Kirkham Abbey Hall the species recorded included *Scrophularia nodosa* L. (Figwort), *Veronica montana* L. (Wood Speedwell), *Campanula latifolia* L. (Giant Bellflower), *Teucrium scorodonia* L. (Wood Sage), and *Melica uniflora* Retz. (Wood Melick). In rides through young plantations in the Crambeck area *Hypericum pulchrum* L. (Pretty St. John's Wort), *Luzula pilosa* (L.) Willd. (Hairy Woodrush), *L. sylvatica* (Huds.) Gaud. (Greater Woodrush) and the sedges *Carex pallescens* L., *C. pilulifera* L. and *C. echinata* Murr. were noted, while the edge of a hayfield yielded *Silene dichotoma* Ehrh. (Forked Catchfly) and nearby *Lithospermum officinale* L. (Gromwell) was seen. Professor Good reported *Menyanthes trifoliata* L. (Buckbean), *Sanguisorba officinalis* L. (Great Burnet) and *Gymnadenia conopsea* (L.) R.Br. (Fragrant Orchis) from Jeffrey Bog and vicinity.

On Sunday the south end of Howsham Wood was explored. The rides here proved interesting ground and provided many species additional to those observed on the previous day. The sedges *Carex remota* L. and *C. otrubae* Podp. were plentiful and clumps of their hybrid \times *C. axillaris* Good. were seen in three different places. *Trifolium medium* Huds. (Zigzag Clover), *Sanguisorba officinalis* L. (Great Burnet), *Calamagrostis epigeios* (L.) Roth. (Bush grass) and *Carex contigua* Hoppe were amongst the other species observed.

After leaving Howsham Wood a short visit was paid to the chalk east of Leavening where the poppies *Papaver dubium* L., *P. lecoqii* Lamotte and *P. argemone* L. were all seen together in a fallow field. At Burythorpe *Glyceria plicata* Fr. (Flote-grass), *Triglochin palustre* L. (Marsh Arrow-grass), *Carex paniculata* L. and *Cardamine amara* L. (Large Bitter-cress) were seen, and a sand pit near Kennythorpe yielded *Geranium pusillum* Burm. f. (Small-flowered Cranesbill) and *Ornithopus perpusillus* L. (Birdsfoot).

About 350 species were noted in the course of the week-end, bringing the total for the East Riding part of the square only, to over 400. As the area forms only a very small part of the grid-square concerned there is no doubt that the total could be substantially increased by further attention being paid to ecologically different habitats in the same region.

Bryology (F. E. Branson): The area visited was not very rich in bryophytes; only four liverworts were noted and the list of mosses was less than one would expect in such a wet season. The commonest species noted was *Acrocladium cuspidatum* (Hedw.) Lindb. *Funaria hygrometrica* Hedw., *Barbula convoluta* Hedw., *Dicranella heteromalla* (Hedw.) Schp. and *Ceratodon purpureus* (Hedw.) Brid. were plentiful in the woods near the River Derwent. Other species noted included:

<i>Mnium undulatum</i> Hedw.	<i>Campylopus piriformis</i> (Schultz) Brid.
<i>M. hornum</i> Hedw.	<i>Polytrichum formosum</i> Hedw.
<i>M. punctatum</i> Hedw.	<i>P. juniperinum</i> Hedw.
<i>M. longirostrum</i> Bridel.	<i>P. piliferum</i> Hedw.
<i>Cirriphyllum piliferum</i> (Hedw.) Grout	<i>Barbula fallax</i> Hedw.
<i>Atrichum undulatum</i> (Hedw.) Beauv.	<i>B. unguiculata</i> Hedw.
<i>Plagiothecium denticulatum</i> (Hedw.) B. & S.	<i>Pseudocleropodium purum</i> (Hedw.) Fleish.
<i>Rhytidiadelphus squarrosus</i> (Hedw.) Warnst.	<i>Camptothecium lutescens</i> (Hedw.) Brid.
<i>Eurhynchium praelongum</i> (Hedw.) Hobkirk	<i>Fissidens taxifolius</i> Hedw.
<i>E. confertum</i> (Dicks.) Milde	<i>Hypnum cupressiforme</i> Hedw.
<i>Amblystegium serpens</i> (Hedw.) B. & S.	<i>Weissia crispa</i> (Hedw.) Mitt.
	<i>Brachythecium rutabulum</i> (Hedw.) B. & S.

The four liverworts seen were:

<i>Lophocolea bidentata</i> (L.) Dum.	<i>Plagiochila asplenoides</i> (L.) Dum.
<i>L. heterophylla</i> (Schrad.) Dum.	<i>Pellia epiphylla</i> (L.) Ccrda.

Fungi (W. G. Bramley): Only the banks of the Derwent and the woods at Kirkham were visited. The remarks on the Hawnbly excursion apply also to this

area. The Glyceria smut, *Ustilago longissima*, was noted by many, but only one stem of *Epilobium hirsutum* infected with *Puccinia pulverulenta* was seen on a long stretch of river bank. New or notable records include:

* Not in Mason & Grainger's *Catalogue of Yorkshire Fungi* for V.C. 61.

† Not in Mason & Grainger's *Catalogue of Yorkshire Fungi*.

* *Ustilago kuhneana* Wolff., on *Rumex acetosa*.

Dasyscypha acutipila (Karst.) Sacc., on *Phalaris*.

† *D. pudimenta* (Quel.) Sacc., on *Salix*.

* *Didymella tosta* B. et Br., on *Chamaenerion*.

Leptosphaeria doliolum (Pers.) Fr., on *Angelica*. The *Leptosphaeria* seen at Hawnby and other areas by the writer was not seen on this excursion.

* *Dilophospora alopecuri* Fr., on *Holcus*.

† *Podoconis alta* (Preuss.) Mason & Hughes, on *Clematis*.

MASHAM FOR COLSTERDALE, V.C. 65, July 19th

This meeting was favoured with perfect weather, and in spite of the poor transport facilities, and rather early start, twenty-seven members were at headquarters for the start of the excursion. The party went by cars to Marks Bridge, where the botanists and some members of other sections followed Birk Gill Beck as far as the waterfall, returning by the track over the moor to join the road up the dale near the old schoolhouse. Others explored the Burn Valley and went on after lunch to Ilton Reservoir. After tea, the party went to Mr. Chislett's house for the meeting which was held in the garden, and was enjoyed by all present. Eleven affiliated societies were represented.

Ornithology (R. Chislett): Knowing the birds of the area I was curious to see how many of the 90 local breeding species would be noted as late as July 19th in one day.

Birk Gill and the moors above Ilton Reservoir, and the woodlands at lower altitudes were investigated. Fifty-nine species were recorded or almost two-thirds of the possible. A month earlier the total would probably have reached 70 on the same ground.

Not a duck appeared, although Mallard, Teal and Tufted were present somewhere. Canada Geese at Ilton numbered 98 including some well-grown young. Hawks consisted of Kestrel, Merlin, and one Buzzard. Woodcock and Redshank were the only waders missed on the ground covered. Only Song Thrush and Wren sang ubiquitously, so that Nuthatch, Blackcap and Garden-Warbler escaped notice although all are fairly plentiful, but Wood-Warblers used their monosyllabic note in several places. Spotted and Pied Flycatchers, Redstarts, Tree Pipits and Tree Creepers were seen but not heard. Tits seemed scarce but Marsh Tits were noted. Only one Woodpecker (the Green) was seen out of three possible. Finches included Linnet and Redpoll. Several Grey Wagtails were seen, but the Yellow eluded us though known to be present. A young Cuckoo attended by Pied Wagtails added two species to the list which would have been shorter without local knowledge and several very competent observers.

Lepidoptera (F. Hewson): A blazing sun, lush vegetation on streamside and slope, woodland and heather moor, this was ideal country at its pleasantest, yet comparatively few species and specimens were observed. These were:

Coenonympha pamphilus L. (Small Heath). c. ten.

Lycaena phlaeas L. (Small Copper). One.

Lyncometra ocellata L. (Purple Bar Carpet). c. six.

Lygris populata L. (Northern Spinach). One.

Ortholitha mucronata Scop. (Lead Belle). One.

Odezia atrata L. (Chimney Sweeper). Few.

Lasiocampa quercus L. f. *callunae* Palmer (Northern Eggar). Two larvae.

Flowering Plants (C. M. Rob): The botanists found plenty to interest them in Birkgill. In the lower part there was a considerable area of damp ground which had been disturbed at some quite recent period, possibly by timber leading. Here

was an abundance of *Epilobium pedunculare* A. Cunningham (New Zealand Willow-herb). This alien is by now quite a common plant in many of the dales, but the amount in this area is most striking. Although the bulk of it was below the water-works hut it has spread for some distance into the undisturbed part of the gill. *Myosotis brevifolia* C. E. Salmon, and *M. secunda* Murr. (Water Forget-me-nots). were both noted in boggy parts in the lower part of the gill. A single patch of *Ranunculus lenormandi* F. Schultz (Water Crowfoot) was also seen in this area. Nine species of *Carex* were noted, the most interesting being *Carex laevigata* Sm. (Smooth Sedge). Both *Vaccinium vitis-idaea* L. (Cowberry) and *V. myrtillus* L. (Bilberry) were plentiful on the open moor but a close search failed to reveal the hybrid. *V. Oxycoccus* L. (Cranberry) was growing in the wetter parts.

Ferns were very abundant, especially where the shale formed steep cliffs and the area was heavily shaded. *Asplenium viride* Huds. (Green Spleenwort) occurred in a few places. *Thelypteris dryopteris* (L.) Slosson (Oak Fern) and *T. oryopteris* (Ehrh.) C. Chr. (Mountain Fern) were abundant. *T. phegopteris* (L.) Slosson (Beech Fern) was on one bank not far from the waterfall. *Dryopteris borreieri* Newm. was frequent throughout the gill, *Polystichum setiferum* (Forsk.) Woynar (Soft Shield Fern) was noted in several places while the Male and Lady ferns were a fine sight.

The outstanding discovery of the day was made by Mrs. Payne, who found about twenty plants of *Ceterach officinarum* DC. (Rustyback Fern) on a wall at Healey. This fern is said to have been abundant in Wensleydale about a hundred years ago, but today there are only three stations known in VC 65, viz., near Hawes, near Richmond, and the one discovered during this meeting.

Mapping cards were used and 43 additions were made as a result of the excursion bringing the square total to 432.

Bryophyta (E. E. Branson): The following bryophytes were collected in and near Birk Gill:—

MOSSES.

- | | |
|---|--|
| <i>Atrichum undulatum</i> (Hedw.) P. Beauv. | <i>Thuidium tamariscinum</i> (Hedw.) B. & S. |
| <i>Polytrichum formosum</i> Hedw. | <i>Cratoneuron commutatum</i> (Hedw.) Roth. |
| <i>P. commune</i> Hedw. | <i>Drepanocladus uncinatus</i> (Hedw.) |
| <i>Fissidens adianthoides</i> Hedw. | Warnst. |
| <i>Dicranella squarrosa</i> (Starke) Schp. | <i>Hygrohypnum ochraceum</i> (Turn. ex Wils.) |
| <i>D. heteromalla</i> (Hedw.) Schp. | Loeske |
| <i>Dicranoweisia cirrata</i> (Hedw.) Lindb. | <i>Acrocladium cuspidatum</i> (Hedw.) Lindb. |
| <i>Dicranum majus</i> Turn. | <i>Isoetecium myosuroides</i> Brid. |
| <i>D. scoparium</i> Hedw. | <i>Brachythecium rutabulum</i> (Hedw.) B. & |
| <i>Leucobryum glaucum</i> (Hedw.) Schp. | S. |
| <i>Barbula convoluta</i> Hedw. | <i>B. rivulare</i> (Bruch) B. & S. |
| <i>Racomitrium aciculare</i> (Hedw.) Brid. | <i>Pseudoscleropodium purum</i> (Hedw.) |
| <i>R. fasciculare</i> (Hedw.) Brid. | Fleisch. |
| <i>Tetraphis pellucida</i> Hedw. | <i>Pleurozium schreberi</i> (Brid.) Mitt. |
| <i>Orthodontium lineare</i> Schwaegr. | <i>Plagiothecium denticulatum</i> (Hedw.) B. & |
| <i>Bryum caespitium</i> Hedw. | S. |
| <i>Mnium hornum</i> Heds. | <i>P. undulatum</i> (Hedw.) Brid. |
| <i>M. undulatum</i> Hedw. | <i>Hypnum cupressiforme</i> Hedw., & var. |
| <i>M. punctatum</i> Hedw. | <i>ericetorum</i> B. & S. |
| <i>Aulacomnium palustre</i> (Hedw.) Schwaegr. | <i>Rhytidiadelphus squarrosus</i> (Hedw.) |
| <i>Philonotis fontana</i> (Hedw.) Brid. | Warnst. |
| <i>Fontinalis squamosa</i> Hedw. | |

LIVERWORTS

- | | |
|---|--|
| <i>Lepidozia reptans</i> (L.) Dum. | <i>Pellia fabbrioniana</i> Raddi. |
| <i>Calyptogeia trichomanis</i> (L.) Corda | <i>P. epiphylla</i> (L.) Corda |
| <i>Lophocolea bidentata</i> (L.) Dum. | <i>Scapania undulata</i> (L.) Dum. |
| <i>Orthocaulis floerckii</i> (Web. & Mohr) Buch | <i>Diplophyllum albicans</i> (L.) Dum. |
| <i>O. attenuatus</i> (Mart.) Evans | <i>Conocephalum conicum</i> (L.) Dum. |
| <i>Plectocolea obovatus</i> (Nees) Mitt. | |

BOOK REVIEWS

The Ecology of Invasions by Animals and Plants, by Charles E. Elton. Pp. 181 with 50 plates and 51 maps and figures. Methuen & Co. Ltd, 1958. 16/-.

This well-written and documented book is concerned with the changes that may take place in animal and plant communities when the balance is disturbed by man, either by the introduction of species from another part of the globe or by agriculture, deforestation, etc.

In the first chapter the author gives the case histories, with maps, of the spread of a number of introduced species into a new environment. They include the North American Muskrat into Europe and Asia, the Chinese Mitten Crab into the North Sea and Baltic and the Asiatic Chestnut Blight into the East Coast of North America. These he terms 'ecological explosions'. The second chapter deals with the six realms, proposed by Wallace, each characterised by its peculiar fauna and flora. Land connections in the past, affected by the elevation, depression, folding and drifting of continents, controlled the distribution of species while seas and mountains formed impassable barriers. In the course of time the plant and animal life of each realm attained stability and each developed more or less independently. To-day the large-scale activities of man all over the world have profoundly disturbed this balance and rapid communications have made it easy to introduce animals and plants from one realm to another, even by accident, with unpredictable results.

The theme of this book is that communities, much changed and simplified by man, are much more open to attack by introduced species than complex communities. Perhaps the reviewer can best conclude by quoting a sentence from the last page of this fascinating book: 'From now on it is vital that everyone who feels inclined to change or cut away or drain or spray or plant any strip or corner of the land should ask themselves this question: what animals and plants live in it, what beauty and interest may be lost and what extra risk changing it will add to the accumulating instability of communities?'

An index and 14 pages of references conclude a book which will be of great value to all interested in plant and animal communities; it should also be read by every student of nature.

E.W.T.

Foundations of Embryology, by Bradley M. Patten. Pp. xvi+578 with 962 figures. McGraw-Hill Publications in the Zoological Sciences. 1958, 74/-.

The general impression given by this book is that it is written by a teacher of great capacity and great experience, who realises the peculiar difficulties of embryology for the elementary student and how best to anticipate and minimise them. In a sense his earlier books can be considered an apprenticeship for the present volume, which the author has extended to cover the whole field of basic vertebrate development but in which he is still quite clear about the ground he intends to cover and the reasons for the treatment he has adopted. In the first part a series of more general chapters leads through a description of the sexual organs and maturation of the germ cells to cleavage and establishment of the germ layers, based on amphibians, birds and mammals; here too is included a chapter in which the necessary physiological background to the sexual cycle is introduced to supplement the anatomical descriptions. In the second part the development of the chick is used to outline the initial organisation of the body and the establishment of the various organ systems, and in the third part the further development of the organs is based on mammalian material, particularly of the pig and human. The treatment in general is primarily descriptive and traditional, but the functional significance of embryological features receives frequent comment and stress is laid on the basic similarity of developmental processes throughout the vertebrates as a whole. This book can be wholeheartedly recommended for the use of elementary zoologists and medical students, also its production is good and the very numerous illustrations are admirably executed and excellently labelled, so that the price must nowadys be considered reasonable.

T.K.

Elephants, by Richard Carrington. Pp. 272 with 24 plates. Chatto & Windus, London, 1958. 25/-.

This is a popular, but by no means trivial, account mainly devoted to modern

elephants though with adequate reference to early *Proboscidea*. It deals with all facets of elephant morphology and physiology as an introduction to a fuller treatment of the animals in contact with humankind as food, as a pest, as servant and ally, and in mystical significance. Mr. Carrington writes, as always, with grace and distinction and contrives to present his factual account in a manner which is bound to captivate the general reader while casting the net of his enquiry so widely that he will be a very well-endowed mammalogist who is not from time to time surprised or informed from the array of knowledge which the author has charmed into a coherent story.

A final chapter on preservation and control declares the author's sympathies with conservation and cannot fail to enlist those of every enlightened reader. Finally, not only is the book adequately indexed but it is also provided with a key to bibliographical references and a copious bibliography which will be of great use as well as disclosing from what wide sources this admirable work has been condensed.

E.H.

The Wandering Albatross, by **William Jameson**. Pp. 100 with 23 photographs. Hart-Davis, London, 1958. 16/-.

Admiral Jameson writes not as an ornithologist but as an amateur of the Albatross. Like most who have served in southern waters, he has first-hand acquaintance with the species but his book is mainly a collation devoted to demolishing the legend that it has ever been considered unlucky to kill the bird by anyone except Coleridge and to establishing a theory of aerodynamics which would explain how the great shearwaters move such great distances without the apparent expenditure of the slightest effort. It seems unlikely that the latter can be argued from observations made from a ship which itself displaces such a large volume of air as to provide an every-ready upthrust for these perfected gliders.

Although ostensibly dealing with this single southern species, Admiral Jameson includes mention of attacks upon human beings which would appear to be directly referable to the Giant Fulmar which will certainly attack any disabled animal and his reference to the male's 'rapidly clapping his bill, the lower mandible moving much faster than the upper . . .' calls up a somewhat incongruous picture.

All in all, Sir William conveys his interest and his wonder in a very pleasing way and if he succeeds only in pointing out how little is known, how little understood concerning these highly specialised birds, he will have done no small service.

A.H.

Tupu-Tupu-Tupu, by **Peter Krott**. Pp. 232 with 37 photos and 2 maps. Hutchinson, London, 1958. 21/-.

Tupu is the author's pet name for the wolverine or glutton, the largest of the *Mustelidae* and an animal hitherto little known except by an apocryphal reputation. Beginning by dealing in native Scandinavian animals for the zoos of Europe, Mr. Krott developed an affection for the wolverine which led him to keep a series of them as close companions. The wolverines escaped from time to time and an animal which can pull down a well-grown elk besides possessing a fearsome reputation soon comes into conflict with human interests. Some of the author's pets were shot, with attendant publicity, and the matter received more than a little attention in the national press with a verbal warfare between the trigger-happy and the conservationists. Mr. Krott's path in attempting to study the habits of what turned out to be a fascinating creature proved thorny and anxious in the extreme, for he was faced with the unhappiness occasioned by the violent end of animals for whom he had come to have a great affection and also the economic worry of being deprived of the animals he had eventually been given a grant to study. His pioneer efforts can hardly fail to be rewarded for his scientific assessment of the wolverine as a predator shows it to be in conflict with human interests only where there are concentrations of domestic stock and a more enlightened outlook will no doubt come of his work.

There are other facets to this interesting work which has been unobtrusively translated by Edward Fitzgerald.

A.H.

Botany, by **John H. Elliott**. Pp. x+214 with 79 text figures. *Teach Yourself* Series. English Universities Press. 7/6.

Dr. Elliott has assembled a large number of botanical facts in every chapter of this compact little volume, and has most successfully carried out his stated intention of outlining the scope of botany, heredity being perhaps the only major branch of the subject not touched upon.

Whether such a concentrated survey is the best approach for a non-botanist tackling the subject alone is, however, open to doubt. By itself, it is not sufficiently detailed for an examination student (except, perhaps, the good section on anatomy), and yet it is too concentrated, too theoretical and often too technical for one taking up botany as a hobby. Better and more numerous drawings would help (there are none on cell division) and above all, more encouragement to the reader to go out and observe specimens himself, and more instruction on how to carry out simple experiments, which would obviously restrict the ground covered in a small book.

There are a few misprints and inaccuracies—the plural of flagellum is not, “flagellae,” and the terminal bud of a crocus corm does not form a new corm, etc.—and the words and phrases chosen do not always make for clarity.

The chapters on ‘Plants and Man’ and ‘Plant Communities’ will at once capture interest and the whole book is full of useful information, yet it does not present a really inspiring approach to the study of plants, nor does it transmit the author’s own enthusiasm. It is a book for a passive botanist and the thrill of botany is in its active pursuit.

M.E.M.

Animal Friends and Foes, by **Osmund P. Breland**. Pp. 225, Faber and Faber, 1958. 16/-.

This is a popular book by the Professor of Zoology of the University of Texas and is intended as a companion volume to his earlier *Animal Facts and Fallacies*. The present volume is divided into ten sections commencing with the mammals, birds, reptiles and fishes, which together occupy about three-fifths of the contents, and continuing with the invertebrates.

The author considers the known habits of a great variety of animals, ranging from whales to protozoa, in an attempt to establish which are harmful and which are beneficial to man. The facts are well presented and the book is attractively written though the English reader may be a little surprised at some of the questions that the author sets himself to answer. Examples are: Which animal keeps the largest harem? What can you do with a Walrus? or, How dangerous are Octopuses?

The titles of suggested reference books fill six pages and there is a useful index. In addition the text is enlivened by some 20 line drawings of a humorous character. The book is well produced, attractively written and correctly priced. It cannot fail to amuse and instruct any student of nature.

E.W.T.

Bootham School Bird List and Notes. 3/6 from Clifford J. Smith, Bootham School, York.

This is compiled from the old and recent records of the Bootham School Natural History Club and its members, of whom the list contains distinguished names. Records include many from such well-known areas as Askham Bog, Strensall and Skipwith Commons, Castle Howard lakes and woods, and Bubwith and Wheldrake Ings. The appendices include maps of these areas and of the surroundings of York, earliest and latest dates of appearances of 20 migrants, and a list of localities mentioned in the text with map references. The Foreword mentions purposeful omission from the list of species that have been recorded very rarely; nevertheless it is rather surprising to find the Black Tern not included—holidays in August may be partly responsible! One would like evidence to justify the statement that ‘many’ (Blue-tits) ‘arrive for the winter, probably mostly from the continent’. The 1957-8 winter cannot be taken as average.

Carefully compiled and written well for the benefit of Bootham students, Yorkshire ornithologists without other Bootham advantages can acquire this useful duplication, and will find it well worth its modest price.

R.C.

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- Coleoptera.**—Section Report, 1957, S. Shaw, 12-14.
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Yorkshire Naturalists' Union.

President :

A. HAZELWOOD, Esq.

Hon. Treasurer :

M. M. SAYER, Esq., 10 The Gardens, Heath Road, Halifax.

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G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary :

Miss C. M. ROB, Catton Hall, Thirsk.

Sectional Meetings,

VERTEBRATE SECTION

SPRING MEETING

Saturday, March 15th, 1958, 2-45 and 5-45 p.m.

St. John's Parish Hall, Mark Lane, Leeds, 2 (behind Lewis's Ltd.)

1. Report for 1957 of Spurn Bird Observatory, by G. H. Ainsworth, Esq.
2. The Yorkshire Ornithological Report for 1957, by R. Chislett, Esq.
3. A talk by Philip Stead, Esq., on 'The Birds of Teesmouth'.
4. 'Grey Seals of the Farne Islands'—an illustrated talk by Mrs. Grace Hickling.
5. A miscellany of bird slides shown by R. M. Wreglesworth, Esq.

ENTOMOLOGICAL SECTION

Saturday, March 29th, 1958, 2-30 p.m.

Tolson Memorial Museum, Ravensknowle Park, Huddersfield

(By kind permission of the Director, E. W. Aubrook, Esq.)

Two short papers will be read:

'Caddis-fly Ecology,' by A. Brindle, F.R.E.S.

'The Black Eggar,' by W. E. Collinson, F.R.E.S.

An exhibition of specimens will follow to which members are asked to contribute.

Tea and Light Refreshments are available at the Museum Cafe.

BRYOLOGICAL COMMITTEE

SPRING MEETING

Saturday, April 19th, 1958.—Excursion to Bolton Abbey.

10-55 a.m. Grassington bus from Ilkley (Brook Street) to Strid Cottage, arriving there at 11-20 a.m.

Return from Bolton Abbey Post Office at 4-45 p.m., due in Ilkley at 5-5 p.m.

Carry lunch.

AUTUMN MEETING

Saturday, September 20th, 1958.—Excursion to Pateley Bridge (for Guisecliff).

Meet Pateley Bridge bus terminus at 10-40 a.m.

Bus departs Harrogate at 9-45 a.m.

Carry lunch.

MYCOLOGICAL COMMITTEE

Chairman: W. D. GRADDON, B.Sc., Congleton.

SPRING FORAY

We are hoping to arrange accommodation at Cawthorne and Barnsley for a week-end in April (Thursday to Monday), but at the present time (end of January) arrangements are not complete.

Would members requiring particulars of this meeting write to Miss J. Grainger, Wilshaw, Meltham, Huddersfield. (Tel.: Meltham 352.)

AUTUMN FORAY

August 29th to September 2nd, 1958

At Malham Tarn Field Centre

(By courtesy of P. F. Holmes, Esq., M.A.)

The cost will be 17/- per day and Membership of the Field Studies Council, which is 5/-.

Members must bring their own bed sheets, pillow cases, towels and soap. The nearest shop is $3\frac{1}{2}$ miles away, but sweets, cigarettes, tobacco and postcards are available at the centre. Stamps and first-aid equipment should, however, be brought.

Single accommodation is very limited and members are asked, if possible, to share.

BOOKING.—Mr. Holmes would be grateful if members would book as soon as possible enclosing **£1 booking fee** which will be deducted from the final account. It is normally forfeited if a reservation is cancelled. Cheques should be made payable to **The Field Studies Council**.

As we are being admitted at a reduction of normal fees, will members please comply carefully with these requests.

APPROACH.—Members arriving by train can alight at Settle on the Leeds-Carlisle line or Giggleswick on the Leeds-Morecambe line. (Independent taxi charges are 17/6 and £1 respectively.) Times are 2-02 p.m. and 5-17 p.m. Settle, and 4-44 p.m. Giggleswick. If several members arrive together and let the Warden know a **week in advance**, taxi fares will be much cheaper.

BUSES.—Members can get a train to Skipton then a bus to Malham Village. This will be followed by a $3\frac{1}{2}$ mile walk uphill. (12-25 p.m. and 4-25 p.m. on some days—please check.)

It is possible that members with cars would assist with conveying books, etc., providing arrangements are made beforehand and do not involve an extra journey.

MAPS.—Local Ordnance Survey, 1 inch, Sheet 90. $2\frac{1}{2}$ inch O.S. maps the 'home four' are sheets 34/86, 34/87, 34/96, 34/97.

The Annual Meeting of the Mycological Committee will be held on Saturday, August 30th, at approximately 8 p.m. preceded by the Chairman's Address.

Will members please note that subscriptions for 1958 are now due and should be sent to Mr. Shaw at the address given overleaf.

Yorkshire Naturalists' Union.

President :

A. HAZELWOOD, Esq.

Hon. Treasurer :

M. M. SAYER, Esq., 10 The Gardens, Heath Road, Halifax.

Assistant Hon. Treasurer and Membership Secretary :

G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary :

Miss C. M. ROB, Catton Hall, Thirsk.

Divisional Secretary :

Miss C. SHADDICK, Dawcross, Pannal, Harrogate.

Telephone: Harrogate 81477.

The 560th Meeting

WILL BE HELD AT

SETTLE

V.C. 64

From Saturday, MAY 24th to
Monday, MAY 26th, 1958

HEADQUARTERS.—The Ashfield Hotel, Settle (Settle 2224): 30/- per day per person, full board. (Ham and salad and fruit tea, 8/6; plain tea 3/-.)

Accommodation may also be had at the Golden Lion, Settle, 50 yards from Headquarters (30/- single, 52/6 double); the White Hart, Giggleswick, (25/- to 30/- per day, bed and breakfast, 17/6); the Black Horse, Giggleswick (30/- single, 50/- double) and Woodlands, the Mains, Giggleswick (30/- per day). Other hotels include the Falcon, on the outskirts of Settle, the Royal Oak, Settle (only a few rooms available) and the Talbot, small, bed and breakfast only.

Settle and Giggleswick are only about half a mile apart. Woodlands is situated above Giggleswick, about $\frac{3}{4}$ mile from headquarters.

TRANSPORT.—Summer time-tables are not yet available, but there is a good bus service from Skipton, and train services to both Settle and Giggleswick.

MAPS.—One-inch Ordnance Survey (New Popular Edition), Sheet 90, Askrigg and Settle. Two-and-a-half inch, Sheet 34/86 for Settle, 34/77 for Colt Park.

PERMISSION.—The Nature Conservancy have given permission to visit Colt Park Wood and Ling Gill. Please note that plants may not be collected in these areas. (See Mr. P. F. Holmes's note below.)

MEET—Friday evening at Headquarters and each morning. It is hoped to leave each day at about 10.30. A note of the proposed route will be left at Headquarters for any late arrivals. On Sunday it is proposed to visit Colt Park Wood and Ling Gill, and it is expected that it will be possible to transport all members there by car. High tea will be served at Headquarters on Monday, 26th May, at 5 p.m. followed by a short meeting to receive reports and elect new members. Members requiring a high or plain tea at Headquarters should book in advance.

PREVIOUS MEETINGS.—The last meeting was at Giggleswick in August 1943 to investigate Cocket Moss. This area is not likely to provide much of interest so early in the year and it is proposed to spend most of our time on the limestone. The proposed visits to Colt Park Wood and Ling Gill should prove of special interest and the Nature Conservancy will welcome full records, particularly of 'difficult' orders.

THE DISTRICT.—Mr. P. F. Holmes, M.A., our immediate Past-President and Warden of Malham Tarn Field Centre, writes:

Settle stands at the north end of a large post-glacial lake flat, through which the present River Ribble meanders; it lies in an area of striking geological contrasts, with corresponding contrasts in the vegetation. The Mid-Craven Fault crosses the valley through Settle and continues west along Giggleswick Scar; south of these fault lines there is typical Millstone Grit country, while to the north is fine Carboniferous limestone scenery. Travelling up Ribblesdale the North Craven Fault is encountered crossing the valley at Stainforth and this exposes the older pre-carboniferous rocks in the valley floor and sides for several miles upstream, giving a scenery which is more reminiscent of parts of the Lake District than Craven. Above these folded older rocks lie the almost horizontally bedded carboniferous series, predominantly limestone but rising to the Yoredales and the Millstone Grit on Ingleborough and Pen-y-Ghent, which flank the upper parts of the valley. Parts of the area are heavily covered with glacial drift, which takes the form of rounded drumlins towards Ribbleshead.

On Whit Sunday it is proposed to visit Colt Park Wood and Ling Gill, two areas of ancient woodland just north of Selside. These sites have only recently been acquired by the Nature Conservancy and will shortly be declared National Nature Reserves, the first Conservancy reserves in the county, which it is appropriate that the Union should visit on this occasion. They are both places of great ecological interest, being probably remnants of former widespread types of vegetation before extensive sheep-grazing. The Conservancy have asked that there should be no collecting in the reserves but lists of insects and other invertebrates would be welcomed. Lists of plants may be found in Circular No. 353 and in *The Naturalist* for 1930, and an account of a visit by the British Ecological Society in 1953 is given in the *Journal of Ecology*, Vol. 42, pp. 576-578.

The Next Meeting will be at Hawnby V.C. 62 on June 7th.

Yorkshire Naturalists' Union.

President:

A. HAZELWOOD, Esq.

Hon. Treasurer:

M. M. SAYER, Esq., 10 The Gardens, Heath Road, Halifax.

Assistant Hon. Treasurer and Membership Secretary:

G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary:

Miss C. M. ROB, Catton Hall, Thirsk.

Divisional Secretary:

K. G. PAYNE, West Dene, Manor Heath, Copmanthorpe, York.

Telephone: York 66358

The 561st Meeting

WILL BE HELD AT

HAWNBY near Helmsley
V.C. 62

On Saturday, JUNE 7th, 1958

HEADQUARTERS.—The Hawnbys Hotel (Mr. A. Stokell). Afternoon tea only price 2/9 per head.

MEET.—Headquarters 11.15 a.m.

TRANSPORT.—There is no bus service nearer than the main Biltsdale road (about 3 miles). The morning bus leaves Helmsley at 10.45 and members coming by car are asked to look out for members who may have alighted from the bus. The return bus is about 6.45 at the road end arriving at Helmsley 7.8 p.m.

PERMISSION.—Permits have been given by The Earl of Mexborough for the southern part of the Arden Estate and F. Furness Esq. for Yowlass & Murton Gills.

ROUTE.—It is hoped to visit Yowlass Dale and arrangements have been made for cars to be parked at Murton Grange. If this is too long a walk there is plenty of interesting ground in Gowerdale, and the Daleside area the Banks of the River near the Village will also repay investigation.

THE AREA.—Hawnby is on the River Rye, about 1½ miles above the junction of the main stream and the Seph which flows through Biltsdale. Yowlass Dale lies between the Murton Ridge and Old Byland Village, the upper part of this valley is open rough grassland with a few scattered trees, some bracken and many small

calcareous flushes which should be of interest to both entomologists and botanists. Lower down the dale around Caydale Mill, there is some very rough scrubland which reaches down almost to the Rye, there are some rocky bits, a very little ploughland in the floor of the valley but most of the ground is very wild with little afforestation. Nearer Hawnby much of the scrub has been cleared and replanting is in progress, the whole district is rich in plant life and a number of records are to be found in Bakers North Yorkshire.

The Union visited Hawnby on the occasion of the Helmsley Meeting in 1884 and may have done so on some of the Fungus Forays since then.

Many of the records for the last Helmsley meeting (June 1953) will hold good for the ground around Hawnby, while the fact over 490 Species have been "Mapped" gives an indication of the wealth of flowering plants.

MAPS.—The 1" to the mile Ordnance survey Map No. 92 (Pickering) covers the whole area.

TEA.—At Headquarters 5 p.m. followed by the meeting for the presentation of reports and the election of new members.

The Next Meeting of the Union is at Roche Abbey V.C. 63, Saturday, June 21st.

Yorkshire Naturalists' Union.

President :

A. HAZELWOOD, Esq.

Hon. Treasurer :

M. M. SAYER, Esq., 10 The Gardens, Heath Road, Halifax.

Assistant Hon. Treasurer and Membership Secretary :

G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary :

Miss C. M. ROB, Catton Hall, Thirsk.

Divisional Secretary :

Miss J. GRAINGER, Wilshaw, Meltham, Huddersfield.

The 562nd Meeting

WILL BE HELD AT

ROCHE ABBEY

near Maltby, V.C. 63

For Roche Abbey Woods

On Saturday, JUNE 21st, 1958

MEET.—At the entrance to Roche Abbey, (Ministry of Works sign) on Maltby, Worksop road at 11 a.m.

There is a frequent service of buses—Rotherham Maltby—but the only bus stopping at the entrance is the Maltby Worksop one which runs from Maltby 3 hourly, 20 minutes to 10, 20 minutes to 1, etc.

PERMISSION.—Permission to visit The Woods has kindly been given by Lord Scarborough.

NOTE.—The Roche Abbey ruins are not included in the permit. Ordinarily a charge of 6d. is made, but a reduction is made for a party.

MAPS.—The 1" Ordnance Survey Sheet No. 103 (Doncaster) covers the area.

TEA.—Meat salad-cake (price between 5/- and 6/-) *must be ordered from Mrs. E. Race "The Cafe" 92 High Street, Maltby, Near Rotherham, by June 14th.* Members requiring a lighter meal should also write to Mrs. Race. A meeting to receive reports will follow.

BOTANY.—Dr. W. A. Sledge: Roche Abbey is situated on the Magnesian limestone and the surrounding country is well wooded and retains its rural attractiveness despite the proximity of collieries. Kings Wood is the largest tract of woodland in the area and is notable for its fine Yew trees. Spindle tree, Dogwood and Privet are common and the ground in parts is thickly carpeted with Lily of-the-Valley. Daffodils are frequent on the fringe of the wood but will be past flowering. Other species which were noted on the Y.N.U. visit in 1941 included Goldilocks, Columbine Green Hellebore, Toothwort, Moschatel Sweet and Hairy Violet, Primrose and Cowslips together with their hybrid, Wood Smallreed (*Calamagrostis epigeios*) and Adders' Tongue Fern. Stinking Hellebore, Spurge Laurel, Woodruff, Wood Violet, Giant Bellflower, Wild Liquorice (*Astragalus glycyphyllos*) and many other woodland species occur. *Carex digitata* should be looked for on rocky outcrops of limestone in shade. Near the Abbey House as about other monastic ruins in Yorkshire *Ribes alpinum* is abundant, and *Claytonia perfoliata*, *Inula Helenium* and *Parietaria* are also present

Over 350 species have been recorded for this square in the B.S.B.I. mapping Scheme. It is hoped that the master cards will be available at the meeting so that additional records may be entered.

ORNITHOLOGY.—R. Chislett: Although the outcrop of magnesian limestone known as Maltby Crag was spoiled for the naturalist by the opening of Maltby Colliery years ago, the adjacent woods and valleys at Roche, and the Sandbeck Estate, have changed little since I found nests of most of the following birds in the area. I hope to prove they are still there. Warblers should be fairly plentiful and include Wood-Warbler, Willow-Warblers, and Chiffchaff; Greater and Lesser White-throats; Blackcap and Garden-Warbler; Sedge Warbler and possibly Grasshopper Warblers. The woodlands provide habitats for Woodcocks; Green and Great-spotted Woodpeckers, with the Lesser-Spotted Woodpecker a possibility; for Tree-Creepers, Goldcrests and Nuthatches; and for six species of Titmice. Bullfinches and Goldfinches occur, and the Hawfinch is possible. Spotted Flycatchers and Tree-Pipits breed yearly; and the Nightingale has been known occasionally. A pair of Grey Wagtails and of Kingfishers used to breed and may do so still. Turtle Doves were plentiful; Tawny Owls not scarce; and the Little Owl here found an early habitat in Yorkshire. Dabchicks and other species no doubt still occur on the lake.

Next Meeting—Malton, Weekend, July 5th/6th for the Kirkham Abbey/Birdsall area V.C. 61

Yorkshire Naturalists' Union.

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G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary:

Miss C. M. ROB, Catton Hall, Thirsk.

Divisional Secretary:

Miss E. CRACKLES, 143, Holmgarth Drive, Bellfield Avenue, Hull.
Telephone 75490.

The 563rd Meeting

WILL BE HELD AT

MALTON

For Kirkham Abbey, etc.

V.C. 61

On Saturday, July 5th and
Sunday, July 6th, 1958

HEADQUARTERS.—'Green Man', Market Place, Malton, Yorks. Proprietor: J. A. Tate-Smith. Telephone: Malton 7. Terms are: 26/6 per day; 19/- bed and breakfast. Other accommodation includes the Talbot Hotel, Yorkersgate, Malton, Yorkshire (Trust Houses Ltd.)—Room and breakfast, 24/-; 5/6 packed lunch; afternoon tea 2/6; Dinner 8/6. Inclusive terms only for four days or more (36/- per day for 4-6 days). *Members are advised to book accommodation as soon as possible.* It is understood that limited accommodation can also be obtained at the following places:

Mrs. Brown, George Hotel, Yorkersgate, Malton.

Mr. Delaney, Black Swan Hotel, Market Place, Malton.

Mrs. Robinson, 39 Old Maltongate, Malton (Bed and Breakfast only).

Mr. Bayes, Crown and Anchor Hotel, Castlegate, Malton.

Mr. Gascoigne, Temperance Hotel, Castlegate, Malton.

TEA AND MEETING.—Tea at the Green Man at 5-0 p.m. on Sunday, July 6th, will be followed by a meeting for the presentation of Sectional reports, etc.

A ham and tongue salad tea will be provided at 6/- per head. Tea should be ordered by postcard to Mr. Tate-Smith by June 28th.

TRAVEL FACILITIES.—Malton is readily reached by train or 'bus from York, Leeds and Scarborough, but members are reminded of the heavy holiday traffic to and from the coast. Malton can be reached by 'bus from Hull.

It is expected that most members will travel by road and that it will be possible to transport all members to and from Malton each day by private car.

AREAS TO BE VISITED AND PROGRAMME.—Members should meet at Headquarters at 10.45 a.m. on Saturday, and at 10.0 a.m. on Sunday.

The Kirkham Abbey Estates will be visited on the Saturday. Otherwise, a precise programme will not be decided ahead as the most convenient arrangements will depend upon the amount of private transport and numbers of drivers available.

MAPS.—The area is covered by the Ordnance Survey 1 in. sheet, No. 92.

PERMISSIONS.—Our sincere thanks are due to the following landowners for permission to visit their estates: Mrs. L. Brotherton, for the Kirkham Abbey Estates; Vice-Admiral J. Egerton and the Forestry Commission, for the Howsham Wood area. Permission for other areas is being sought.

Will members please note that they should carry their membership cards and that dogs cannot be allowed on any of the excursions. Also an undertaking has been given that gates will not be left open. Mrs. Brotherton is anxious that game should not be disturbed, and so will members please consult the Divisional Secretary *re* specific undertakings, before visiting Kirkham Abbey Estates. No smoking is permitted on Forestry Commission lands.

Previous Meetings. Kirkham Abbey—September 1889 and July 1920. Malton—April 1880 and April 1916; September 1889 and May 1950; Castle Howard—June 1926; North Grimston—1902.

FLOWERING PLANTS.—Professor Good has kindly supplied the following list of plants recorded for the Kirkham-Firby-Westow area: *Ranunculus lingua* L., *Actaea spicata* L., *Diplotaxis tenuifolia* (L.) DC., *Cardamine amara* L., *Minuartia tenuifolia* (L.) Hiern., *Stellaria nemorum* L., *S. palustris* Retz., *Saponaria officinalis* L., *Hypericum calycinum* L., *Geranium pyrenaicum* Burm., *G. phaeum* L., *G. lucidum* L., *Lathyrus montanus* (L.) Bernh., *Prunus padus* L., *Potentilla palustris* (L.) Scop., *Alchemilla vulgaris* agg., *Rosa spinosissima* L., *Saxifraga tridactylites* L., *Chrysosplenium oppositifolium* L., *Myrrhis odorata* (L.) Scop., *Hydrocotyle vulgaris* L., *Anthriscus neglecta* Boiss & Reut., *Adoxa moschatellina* L., *Asperula odorata* L., *Lactuca virosa* L., *Crepis paludosa* (L.) Moench, *Hieracium boreale*, *Campanula ranunculus* L., *Menyanthes trifoliata* L., *Myosotis discolor* Pers., *M. hispida* Schlecht., *Lathraea squamaria* L., *Melampyrum sylvaticum* L., *Salvia verbenaca* L., *Parietaria diffusa* Mert & Koch, *Acorus calamus* L., *Hydrocharis morsus-ranae* L., *Neottia nidus-avis* (L.) C. Rich., *Orchis morio* L., *Coeloglossum viride* (L.) Hartm., *Platanthera chlorantha* (Cust.) Rchb., *Paris quadrifolia* L., *Convallaria majalis* L., *Allium vineale* L., *Colchicum autumnale* L., *Scirpus sylvaticus* L., *Eleocharis multicaulis* (Sm.) Sm., *Carex divulsa* Stokes, *Deschampsia flexuosa* (L.) Trin., *Botrychium lunaria* (L.) Sw., *Osmunda regalis* L., *Polypodium vulgare* L., *Dryopteris cristata* (L.) A. Gray, *D. spinulosa* (Müll.) Watt., *Polystichum lobatum* (Huds.) Woyнар., *Phyllitis scolopendrium* (L.) Newm., *Ophioglossum vulgatum* L.

ORNITHOLOGY.—Ralph Chislett, M.B.O.U., writes: 'The area around Kirkham Abbey is not one that I know well. The route will no doubt take in woodlands and parklands; also the Derwent side and other waters; as well as agricultural lands at low and high levels. To make the most of the opportunity it will probably be as well for the ornithological party to divide and so enable a more complete survey to be made. Reed Warblers used to breed by the Derwent.'

During the Y.N.U. visit to Kirkham in July 1920, the following species were recorded: Green Woodpecker, Jay, Magpie, Kestrel, Sparrow-Hawk, Blackcap and

Garden Warbler, Whinchat, Redstart, Bullfinch, Dipper, Kingfisher, Moorhen and Reed Bunting among others.

CONCHOLOGY.—The following species were noted by Mr. F. Rhodes and Mr. Fysher during the 1920 Excursion:

Arion ater, *A. ater* var. *plumbea*, *A. ater* var. *brunneo pallescens*, *A. subfusca*, *A. hortensis*, *A. circumscriptus*, *Limax arborum*, *L. maximas*, *Agriolimax agrestis*, *A. laevis*, *Vitrinia pellucida*, *Hyalina alliaris*, *H. fulva*, *H. crystallina*, *Pyramidula rotundata*, *Helix nemoralis*, *H. hortensis*, *Helicigona arbustorum*, *H. arbustorum* var. *flavescens*, *Hygromia striolata*, *H. hispida*, *Ashfordia granulata*, *Succinea putris*, *Limnaea pereger*, *L. palustris*, *Physa fontinalis*, *Bithynia tentaculata*, *Spharium corneum*, *Psidium amnicum*.

ENTOMOLOGY.—D. H. Smith writes: In June 1902, at Byland Abbey, M. L. Thompson lists 38 Coleoptera, among which were *Adalia obliterated* (1) and *Barynotus elevatus*.

Dr. W. J. Fordham, by sweeping at the river side at a Y.N.U. meeting in July 1913, near Buttercrambe, recorded 32 Coleoptera and mentions *Stenus pallitarsus* (Steph.), *Malthodes dispar* (Germ.) and *Phyllobrotica 4-maculata* (L.) among others as worthy of note.

April 1916 saw the Y.N.U. at Malton and Fordham mentions among 32 named species, *Anacaena globulus* (Pk), *Tachyusa flavitarsis* (Sahl.), *Quadius scintillans* (Gr), *Tychus niger* (PK) and others, mainly from the beck.

At Kirkham Abbey in July 1920, the only entomological record is of *Cucullia verbasci* on the Great Mullein (in goodly numbers).

The other two recent Y.N.U. meetings were in June 1924 at Castle Howard and Malton 1950, when Mr. C. A. Cheetham recorded a number of Diptera.

Providing the weather is favourable, this particular area, part wooded and well watered, should be an ideal hunting ground for the entomologist.

Next Meeting.—Masham. For Colsterdale, V.C. 65, July 19th.

Yorkshire Naturalists' Union.

President:

A. HAZELWOOD, Esq.

Hon. Treasurer:

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G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General and Divisional Secretary:

Miss C. M. ROB, Catton Hall, Thirsk.

Telephone: Topcliffe 224.

The 564th Meeting

WILL BE HELD AT

MASHAM, V.C. 65

For Colsterdale

On Saturday, July 19th, 1958

HEADQUARTERS.—The King's Head Hotel, The Square, Masham (Mr. J. Easthope). High tea from 6/-: Afternoon tea, 3/-. Members are asked to order which tea they require before the start of the excursion.

TRANSPORT.—Masham is on the Ripon to Leyburn Bus route (United No. 127). The morning bus leaves Ripon Bus Station 9-15 a.m., arriving Masham 9-51. This connects with the 8-35 from Harrogate. The return bus from Masham is at 7-22, arriving Ripon Bus Station 7-58. The bus station at Ripon is some distance from the Railway and the Masham bus does not pass that way.

MEET.—Meet at Headquarters 10-15 a.m. It is hoped there will be plenty of private cars to take any bus passengers up the dale.

PERMISSION.—A permit to visit Colsterdale has been given by Lord and Lady Swinton. Members attending the meeting are asked to see no gates are left open, and that no damage is done to crops. No dogs are allowed.

ROUTE.—By car to Gollinglith Foot; after that the route taken will depend largely on the weather, but if fine it is hoped to go up to Birkgill. Colsterdale is the valley of the River Burn which joins the Ure a little below Masham. Leighton

and Round Hill Reservoirs are in the southern branch, and the much smaller Ilton Reservoir is in a side valley to the south. The area is Millstone grit and there is a good amount of woodland in the lower part, especially around Swinton Park, the 'Tops' are heather moor, and there is marginal grassland in the valleys, with pasture and meadow as one descends the dale, the boundary between the West and North Ridings runs along the watershed to the west and south, the villages of Healey, Fearby and Swinton are in the lower dale, but the higher part is very wild, and habitations are few. Given good weather, all sections should find plenty of interest.

MAPS.—The 1-inch Ordnance Survey Map No. 91 (Ripon) covers all the area to be visited.

TEA.—Tea will be at Headquarters at 5-0 p.m., followed by a meeting to receive reports and elect new members.

Yorkshire Naturalists' Union.

President:

A. HAZELWOOD, Esq.

Hon. Treasurer:

M. M. SAYER, Esq., 10 The Gardens, Heath Road, Halifax.

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G. A. SHAW, Esq., The Department of Botany, The University, Leeds, 2.

Hon. General Secretary:

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Sectional Meetings, 1958

for consideration of the Annual Reports and to nominate Officers for
the Sections and their Committees.

All Members and Associate Members of the Union are eligible to attend.

SUBSCRIPTIONS.—If there are any subscriptions for 1958 still unpaid, will the members responsible please forward them (£1 for Full Members and 5/- for Family Members), without delay, to MR. SHAW at the address given above.

OCTOBER 4th.—**The Botanical Section** will meet in the Botanical Department, Leeds University, at 2-30 p.m. Entrance is *via* the Baines Door, from University Road.

After tea there will be an exhibition of specimens, to which members are invited to contribute.

Will all members and Associate members who have notes and/or Records for the Botanical Section report please send them to the Hon. Secretary, Miss C. M. Rob, Catton Hall, Thirsk, before October 1st. Please note change of date.

OCTOBER 11th (not OCTOBER 4th).—**Conchological Section.** Will members requiring information about this meeting, which will be held in Leeds, please get in touch with Mrs. E. M. Morehouse, 23 Queens Road, Doncaster.

JOINT MEETING OF VERTEBRATE SECTIONS

October 11th, 1958.

St. John's Parish Hall, Marsh Lane, Leeds. (Behind Lewis's in the Headrow.)

2-45 p.m. Ornithological Section (Election of Officers).

3-00 p.m. Mammals, Reptiles, Amphibians and Fishes Section (Election of Officers).

3-15 p.m. Vertebrate Sections:

Report of Mammals, Reptiles, Amphibians and Fishes Section (Mrs. E. Hazelwood).

Interim Report of Spurn Observatory Sub-committee (G. H. Ainsworth).

Interim Report of Ornithological Section (R. Chislett).

6-00 p.m. Some Reptiles and Amphibians. John Armitage (illustrated).

The Goshawk and some other Danish birds. Arthur Gilpin (illustrated).

Tea break from 5-0 to 6-0 p.m.

OCTOBER 25th (not OCTOBER 18th).—**The Entomological Section** will meet at the Leeds City Museum, Park Row, at 2-30 p.m. There will be an exhibition of specimens during the afternoon to which members are asked to contribute, and after tea business will include the election of officers and consideration of reports.

Cups of tea will be available and members should bring their own food.

NOVEMBER 1ST.—**A Meeting of the Executive** will be held at 2-30 p.m. in the Large Committee Room on the first floor of the Parkinson Building of Leeds University. Entry is *via* the main entrance to the University from Woodhouse Lane.

DECEMBER 6TH.—**The Annual Meeting of the Union** will be held at the Cartwright Memorial Hall, Lister Park, Bradford.

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All communications to be addressed to—

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